

Vietnamese Victims of Agent Orange and U.S.-Vietnam Relations

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Summary

Since the end of the Vietnam War in 1975, there has been a gradual warming of bilateral relations between the United States and Vietnam, culminating in the appointment of the first U.S. ambassador to Vietnam in 1996 and the granting of permanent normal trade relations (PNTR) to Vietnam in 2007. Over the last three decades, many—but not all—of the major issues causing tension between the two nations have been resolved.

One major legacy of the Vietnam War that remains unresolved is the damage that Agent Orange, and its accompanying dioxin, have done to the people and the environment of Vietnam. For the last 35 years, this issue has generally been pushed to the background of bilateral discussions by other issues considered more important by the United States and/or Vietnam. With most of those issues presently resolved, the issue of Agent Orange/dioxin has emerged as a regular topic in bilateral discussions.

In the last few years, the United States has shown a greater willingness to fund environmental remediation activities in Vietnam. Since 2007, Congress has appropriated \$59.5 million for dioxin removal and related health care activities in Vietnam. In 2012, the Senate has proposed providing an additional \$20 million in the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2013 (S. 3241), but the House of Representatives has not included dioxin remediation funding in its corresponding appropriations bill, H.R. 5857. The Vietnamese government and people would like to see the United States do more to provide help for victims of Agent Orange, as well as assist with the cleanup of other Agent Orange “hot spots.”

According to various estimates, the U.S. military sprayed approximately 11 million-12 million gallons of Agent Orange over nearly 10% of then-South Vietnam between 1961 and 1971. One scientific study estimated that between 2.1 million and 4.8 million Vietnamese were directly exposed to Agent Orange. Vietnamese advocacy groups claim that there are over 3 million Vietnamese suffering from health problems caused by exposure to the dioxin in Agent Orange.

The people of Vietnam have become increasingly concerned about the issue of Agent Orange. Various non-government organizations are placing more pressure on the Vietnamese government to remove the dioxin from the environment and provide better care to the people exposed to Agent Orange. Some government ministries are comparatively sympathetic to the public concern about Agent Orange, but other ministries are apprehensive that highlighting the dangers of dioxin could have undesired consequences for bilateral relations or for Vietnam’s economy.

This report examines various estimates of the effects of Agent Orange on Vietnam’s people and environment, the history of U.S. policy on the issue, the current cleanup efforts in Vietnam, the various forms of assistance—including U.S. governmental assistance—provided to people with medical conditions associated with dioxin exposure, and the implications for bilateral relations. It concludes with a brief discussion of possible congressional responses to the issue.

This report will be updated as conditions warrant.

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Since the mid-1990s, bilateral relations between the United States and Vietnam have become virtually normalized. The United States has granted Vietnam permanent normal trade relations (PNTR) status and Vietnam has become a member of the World Trade Organization (WTO)—two major objectives of the Vietnamese government following the end of the Vietnam War. As part of the bilateral agreements related to PNTR and WTO membership, Vietnam has made a number of significant changes in its trade policies, and has increased its efforts to help the United States recover the remains of U.S. soldiers and civilians who died during the Vietnam War. The two nations also have expanded their nascent cooperation on strategic and military issues to the point that Vietnam has emerged as an important partner for the United States on many issues in Asia.

Although the United States remains concerned about human rights in Vietnam, tensions between the two nations are comparatively low. However, inside Vietnam, there is a long-standing issue that could continue to cause friction in the future—the condition of Vietnamese people affected by Agent Orange and its unintended byproduct, the dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin, or TCDD.¹ Agent Orange was one of several herbicides that the U.S. military used widely in southern Vietnam during the Vietnam War. According to U.S. Ambassador to Vietnam David Shear, “Agent Orange remains among the most sensitive issues in U.S.-Vietnam relations.”²

Over the last decade, there has been a groundswell of concern among the Vietnamese people about the continuing problems of environmental damage and illnesses associated with Agent Orange. Some non-governmental organizations (NGOs) in Vietnam are seeking compensation or assistance from the U.S. government and the manufacturers of Agent Orange. Partially in response to this rising tide of popular concern, the Vietnamese government has raised the profile of this issue in various bilateral fora with U.S. officials, including the June 2008 summit between President Bush and Prime Minister Nguyen Tan Dung.

Vietnam’s government is divided on the issue of whether to seek greater U.S. assistance with the Agent Orange/dioxin issue. Vietnam’s Ministry of Defense (MOD) and various veterans groups are among the more vocal advocates of seeking more U.S. assistance. Similarly, the Ministry of Health (MOH); the Ministry of Labour, War Invalids, and Social Affairs (MOLISA); and the Ministry of Natural Resources and the Environment (MONRE) would like to see the United States increase its assistance. However, the Ministry of Agriculture and Rural Development (MARD) is concerned that by drawing attention to the continued pervasive presence of dioxin in the Vietnam’s environment, other nations may restrict or prohibit the import of Vietnamese crops, aquatic products, meats and poultry, and processed foods supposedly for health reasons. Some officials in Vietnam’s Ministry of Foreign Affairs (MOFA) are also apprehensive that greater pressure on the United States on the Agent Orange/dioxin issue may have an adverse impact on other important bilateral issues, such as Vietnam’s application to the U.S. Generalized System of Preference program or the ongoing Trans-Pacific Partnership (TPP) negotiations.³

According to one Vietnamese estimate, there are up to 5 million Vietnamese spanning three generations who have medical conditions that are purported to be related to exposure to Agent Orange and similar herbicides—and more importantly, their accompanying dioxin—that the U.S.

¹ For purposes of this report, the term “dioxin” and “TCDD” will be used interchangeably, unless otherwise noted.

² Calum MacLeod, “Fifty Years Later, U.S., Vietnam Deal with Agent Orange,” *USA Today*, November 7, 2012.

³ For more information on Vietnam’s application to the GSP program, see CRS Report RL34702, *Potential Trade Effects of Adding Vietnam to the Generalized System of Preferences Program*, by Vivian C. Jones and Michael F. Martin. For information on the TPP negotiations, see CRS Report R42694, *The Trans-Pacific Partnership Negotiations and Issues for Congress*, coordinated by Ian F. Fergusson.

military sprayed across much of South Vietnam as part of Operation Ranch Hand.⁴ The Vietnamese government and various Vietnamese interest groups have long sought U.S. assistance with the cleanup of the residual dioxin in Vietnam, as well as financial support to provide medical treatment to people exposed to Agent Orange. The official U.S. response to date has been to deny any legal liability and to contest that the medical conditions are related to exposure to Agent Orange and dioxin. The Vietnamese government and people have objected to these denials given the level of support provided to U.S. veterans who were presumably exposed to Agent Orange and the extensive cleanup efforts made at Love Canal, Times Beach, and other U.S. locations found to have elevated levels of dioxin in the soil.⁵

In the waning months of the George W. Bush Administration, there were some indications that the United States was becoming more flexible on this issue—just as the issue has risen in importance in Vietnam. For example, following President Bush’s November 2006 meeting with President Nguyen Minh Triet, the two governments issued a joint statement that included the sentence, “The United States and Vietnam also agreed that further joint efforts to address the environmental contamination near former dioxin storage facilities would make a valuable contribution to the continued development of their bilateral relations.”⁶ The joint statement also indicated that “President Triet also expressed appreciation for the U.S. Government’s increasing development assistance to Vietnam and urged the U.S. side to increase humanitarian assistance including through cooperation on areas such as unexploded ordinance and continued assistance to Vietnamese with disabilities.”⁷

In addition, Congress has demonstrated a willingness to provide assistance for both the dioxin cleanup and humanitarian support for Vietnamese believed to be affected by exposure to dioxin. In May 2007, the 110th Congress appropriated \$3 million to the State Department for the cleanup of dioxin in and around an ex-military base in Da Nang used as a distribution center for Agent Orange during the Vietnam War. Some of the funds were to be used to provide medical care for residents near the ex-military base. The 111th Congress appropriated \$3 million in FY2009⁸ and an additional \$15 million in FY2010⁹ for the cleanup and related health activities in Da Nang. In April 2011, the 112th Congress appropriated \$18.5 million as part of Department of Defense and Full-Year Continuing Appropriations Act, 2011 (P.L. 112-10) for Agent Orange/dioxin remediation and related health activities in Vietnam, and an additional \$20.0 million in the Consolidated Appropriations Act, 2012 (P.L. 112-74). Additional legislation has been introduced in 112th Congress that would appropriate funds for Agent Orange/dioxin remediation and related health activities in Vietnam (see “Issues and Options for Congress”).

⁴ Operation Ranch Hand was the military code name for the spraying of herbicides from U.S. Air Force aircraft across much of southern Vietnam, as well as parts of Cambodia and Laos, from 1962 through 1971 in an effort to eliminate jungle cover for North Vietnamese and Viet Cong forces.

⁵ Observation based on various interviews conducted by author with Vietnamese officials and citizens.

⁶ “Joint Statement Between the Socialist Republic of Vietnam and the United States of America,” Office of the Press Secretary, The White House, November 17, 2006.

⁷ Ibid.

⁸ The details of the appropriation were included in House Appropriations Committee Print, “Division H—Department Of State, Foreign Operations, and Related Programs Appropriations Act, 2009,” of the Omnibus Appropriations Act, 2009 (P.L. 111-8).

⁹ The appropriation of \$3 million was specified in H.Rept. 111-366 of the Consolidated Appropriations Act, 2010 (P.L. 111-117) and an additional \$12 million was specified in S.Rept. 111-188 of the Supplemental Appropriations Act, 2010 (P.L. 111-212).

Some Members of Congress have also stated that the United States has a “moral obligation” to the people of Vietnam—many of whom were either allies at the time or were innocent civilians—to help address the perceived environmental and health problems created by the use of Agent Orange during the Vietnam War. In April 2008, Senator John McCain said in regards to the Agent Orange/dioxin issue, “I believe it remains an irritant, and perhaps more than that, for some of the people of Vietnam. I think we need to continue to address the issue both in compensation for the victims as well as cleanup of areas that are clearly contaminated.”¹⁰

Although both sides appear to be willing to discuss the issue, the legacy of Agent Orange has the potential to adversely affect U.S.-Vietnamese relations in the future. With other key issues apparently resolved, Agent Orange has emerged as one of Vietnam’s top concerns. However, Vietnam’s interest in forming closer economic ties with the United States—such as its formal request for inclusion in the U.S. Generalized System of Preferences (GSP) program¹¹ and the ongoing negotiations of the Trans-Pacific Partnership trade agreement¹²—may once again push the Agent Orange issue into the background.

For the United States, the recent growth in bilateral trade and U.S. investment in Vietnam is providing a strong incentive to improve relations with its former enemy. According to many U.S. manufacturers, Vietnam is one of the more attractive alternative sources to China for a variety of imported products. Also, some analysts think that friendly relations with Vietnam offer a strategic counterbalance to the growth of Chinese influence in Asia. In addition, greater assistance with the cleanup of dioxin in Vietnam and/or aid in providing medical care for dioxin victims may enhance the image of the United States in Southeast Asia, as well as improve Vietnam’s public environmental management and health systems. Some observers assert that if the United States continues to deny the legitimacy of Vietnam’s environmental and health claims—and the responsibility to help ameliorate the damage caused by Agent Orange/dioxin—it risks causing harm to its relations with Vietnam, and possibly weakening U.S. soft power in Asia.¹³

Brief History of Post-War U.S.-Vietnam Relations and the Agent Orange Issue

From 1975 to about 2000, although the Agent Orange issue was on Vietnam’s agenda, it was generally pushed into the background.¹⁴ There are many reasons for this, including Vietnam’s desire for greater trade opportunities with the United States, the U.S. desire for a more complete accounting for U.S. soldiers still listed as “missing in action” (MIA) in Vietnam, Vietnam’s invasion of Cambodia in 1978, and the rising tide of Vietnamese “boat people.”

¹⁰ Bao Van, “Agent Orange Victims Need More Support: McCain,” *Thanh Nien News*, April 8, 2008.

¹¹ For more information on Vietnam’s GSP application, see CRS Report RL34702, *Potential Trade Effects of Adding Vietnam to the Generalized System of Preferences Program*, by Vivian C. Jones and Michael F. Martin.

¹² For more about the TPP negotiations, see CRS Report R42694, *The Trans-Pacific Partnership Negotiations and Issues for Congress*, coordinated by Ian F. Fergusson.

¹³ There has been considerable criticism of a perceived U.S. neglect of Southeast Asia, and a growth in Chinese influence in the region. For more information on this issue see CRS Report RL34620, *Comparing Global Influence: China’s and U.S. Diplomacy, Foreign Aid, Trade, and Investment in the Developing World*, coordinated by Thomas Lum.

¹⁴ For more information on the history of U.S.-Vietnam normalization, see CRS Report RL33316, *U.S.-Vietnam Relations in 2008: Background and Issues for Congress*, by Mark E. Manyin.

In 1975, following North Vietnam's victory over South Vietnam, President Gerald Ford severed diplomatic relations and imposed a trade embargo on Vietnam.¹⁵ Although Vietnam sought to normalize relations, it was predicated on the United States honoring President Richard Nixon's "secret promise" of \$3.25 billion in reconstruction assistance,¹⁶ which the United States was unwilling to do.¹⁷ Although President Jimmy Carter signaled a willingness to discuss normalization soon after his inauguration, the emotional issue of U.S. prisoners of war/missing in action (POW/MIAs), the migration of Vietnam's so-called "boat people," Vietnam's 1978 invasion of Cambodia (known at that time as Democratic Kampuchea), and Vietnam's border conflict with China¹⁸ made any significant warming of relations politically impossible. U.S.-Vietnamese relations became even more frosty following the signing of a mutual defense treaty between Vietnam and the Union of Soviet Socialist Republics (USSR) on November 3, 1978.¹⁹ These circumstances pushed the issue of Agent Orange effectively off the bilateral agenda despite Vietnamese efforts to raise the subject.

President Ronald Reagan was generally opposed to any move towards normalizing relations with Vietnam so long as Vietnamese forces remained in Cambodia and the Vietnamese government had not provided a "full accounting" of U.S. POW/MIAs.²⁰ In addition, the Reagan Administration, which repeatedly expressed a skepticism about U.S. veterans claiming medical problems related to Agent Orange exposure, was generally unwilling to discuss the issue of Vietnamese nationals with similar medical conditions supposedly caused by Agent Orange exposure.

Following Vietnam's withdrawal from Cambodia in 1989, President George H. W. Bush reopened communication with Vietnam. In April 1991, President Bush announced a U.S. "roadmap" for normalization of relations that included greater cooperation in locating and returning the remains of approximately 2,200 U.S. soldiers and civilians who were still unaccounted for at that time. Vietnam responded by allowing the United States to open an MIA office in Hanoi and offering greater cooperation and assistance in locating the remains of U.S. personnel. On February 6, 1991, President Bush said,

I am pleased today to sign into law H.R. 556 [P.L. 102-4], the "Agent Orange Act of 1991." This legislation relies on science to settle the troubling questions concerning the effect on

¹⁵ President Johnson imposed a trade embargo on the Democratic Republic of Vietnam (North Vietnam) on May 4, 1964, using his authority under the Trading with the Enemy Act of 1917. President Ford extended the embargo to all of Vietnam on April 30, 1975.

¹⁶ During the peace negotiations for the Vietnam War, then President Nixon wrote a secret letter on February 1, 1973, to then-Prime Minister Pham Van Dong promising the United States would contribute "in the range of \$3.25 billion" in postwar reconstruction assistance over a five-year period.

¹⁷ In 1976, Congress passed legislation—the International Security Assistance and Arms Export Control Act (S. 2662)—that would have partially ended the embargo on trade with Vietnam, but President Ford vetoed the bill.

¹⁸ Following Vietnam's invasion of Cambodia, Chinese troops entered Vietnam, precipitating a border conflict. Given the Cold War politics of the time, the United States was more concerned about maintaining its developing relations with China than fostering relations with Vietnam.

¹⁹ The Vietnamese-USSR mutual defense treaty was primarily targeted at the People's Republic of China (China), not the United States. Both Vietnamese and USSR relations with China had soured during the 1970s, and both nations perceived a military threat from neighboring China. For Vietnam, the threat was quite real, as China attacked Vietnam in 1979, in part in response to Vietnam's invasion of Cambodia.

²⁰ For more information on the POW/MIA issue, see CRS Report RL33452, *POWs and MIAs: Status and Accounting Issues*, by Charles A. Henning.

veterans of exposure to herbicides—such as Agent Orange—used during the Vietnam era.²¹

However, President Bush’s approval of assistance for U.S. veterans exposed to Agent Orange did not extend to Vietnamese veterans and civilians; Vietnamese efforts to discuss the issue were generally rebuffed by the United States.

President William Clinton built on the general thaw in bilateral relations by signaling the end of U.S. opposition to Vietnam receiving international financial assistance. On February 3, 1994, President Clinton announced the end of the U.S. trade embargo on Vietnam. In April 1994, Congress passed the Foreign Relations Authorization Act, Fiscal Years 1994 and 1995 (P.L. 103-236) that expressed the Senate’s support for the normalization of relations with Vietnam. Despite some congressional efforts to tie normalization to the POW/MIA issue, President Clinton continued to advance U.S. relations with Vietnam by appointing the first post-war ambassador to Vietnam in 1996 and signing the U.S.-Vietnam bilateral trade agreement (BTA) in 2000.

Towards the end of the Clinton Administration, the United States signaled an increased willingness to address the Agent Orange issue. In March 2000, then Defense Secretary William Cohen pledged greater U.S. cooperation with Vietnam’s Agent Orange problems during a trip to Hanoi. Eight months later, during President Clinton’s five-day trip to Vietnam, the United States and Vietnam agreed to set up a joint research study on the effects of dioxin/Agent Orange. In March 2002, the United States and Vietnam signed a memorandum of understanding (MOU) that specified future collaborative research on the human health and environmental effects of Agent Orange and dioxin, as well as created a Joint Advisory Committee (JAC) to oversee such collaboration.

However, there continued to be clear limits on U.S. willingness to provide assistance. In August 2000, then U.S. Assistant Deputy Under Secretary of Defense Gary Vest traveled to Hanoi for bilateral meetings on environmental security, which included discussions of the Agent Orange issue. Following those meetings, Vest stated, “It is very important to emphasize we were not here to discuss a U.S. government cleanup of contamination.” Vest went on to explain that it was his understanding that under current international and U.S. law the U.S. military could only undertake contamination cleanup activities outside of the United States if there is a clear liability under an international agreement or if specifically authorized by Congress.²²

Progress towards the resumption of normal bilateral relations continued during the Bush Administration. Congress ratified the U.S.-Vietnam BTA in October 2001; the new agreement went into effect on December 10, 2001. Under the BTA, the United States granted Vietnam conditional normal trade relations (NTR).²³ Vietnam’s conditional NTR status was renewed every year until December 2006, when Congress passed P.L. 109-432, a comprehensive trade and tax bill, that granted Vietnam permanent NTR status as part of a wider agreement that saw Vietnam become a member of the World Trade Organization (WTO) on January 11, 2007.

Following the lifting of the trade embargo and the granting of NTR status, U.S. trade with Vietnam grew rapidly (see **Figure 1**). In addition, a rising number of U.S. companies invested in

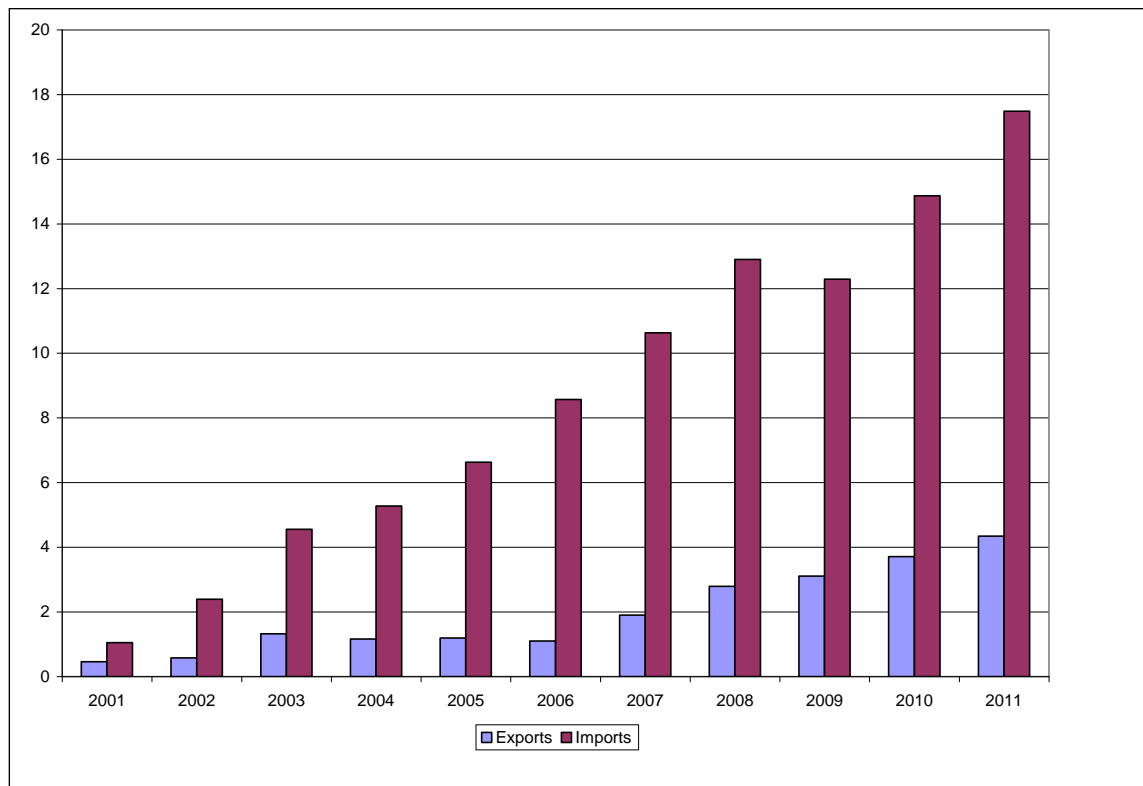
²¹ “Statement on Signing the Agent Orange Act of 1991,” February 6, 1991, as posted by The American Presidency Project, <http://www.presidency.ucsb.edu/index.php>.

²² “US Wants Private, World Role in Agent Orange Plan,” Reuters, August 4, 2000.

²³ Previously known as temporary most favored nation (MFN) status.

manufacturing facilities in Vietnam. Between 2001 and 2011, total bilateral trade between the two nations rose from \$1.5 billion to \$21.8 billion, according to official U.S. trade statistics.²⁴

Figure 1. U.S. Trade with Vietnam, 2001-2011
(U.S. \$ Billions)



Source: U.S. International Trade Commission.

Relations between Vietnam and the United States have also improved on matters of national security. In 2005, the United States and Vietnam signed an international military education training (IMET) agreement. Since then, a number of Vietnamese military officials have participated in training programs in the United States, and U.S. naval vessels have been allowed to make port of call visits to Vietnam. In August 2010, the two nations conducted week-long joint naval exercises in the South China Sea, as part of the celebration of 15 years of renewed diplomatic relations. Joint naval exercises were held again in July 2011 and April 2012, off the coast of Da Nang.

Despite the general improvement in bilateral relations during the Bush Administration, the joint U.S.-Vietnamese studies of the effects of Agent Orange on Vietnam fell apart among claims of failure to act in good faith by both parties. In a “sensitive” (but not classified) dispatch of February 16, 2003, from the U.S. Embassy in Hanoi to the Secretary of State, a State Department official wrote that the Vietnamese government was unwilling to accept internationally recognized scientific methods because the results may not support their claims of widespread environmental

²⁴ For a general discussion of U.S.-Vietnam economic and trade relations, see CRS Report R41550, *U.S.-Vietnam Economic and Trade Relations: Issues for the 112th Congress*, by Michael F. Martin.

damage and severe health effects.²⁵ The Vietnamese government claimed that U.S. officials were instructed to prevent the completion of the exposure studies by senior government officials. In March 2005, the United States unilaterally terminated the research project.²⁶

Moreover, the Bush Administration was reluctant to provide direct assistance to people with health problems related to exposure to dioxin. During an April 2006 trip to Vietnam, then U.S. Secretary of Veterans Affairs James Nicholson was pressed by Vietnamese journalists to explain why the United States offered compensation to U.S. Vietnam veterans with Agent Orange-related medical conditions, but not to Vietnamese veterans and civilians.²⁷ In June 2006, then U.S. Secretary of Defense Donald Rumsfeld reportedly stated that the United States would not compensate supposed Vietnamese Agent Orange victims, but would be willing to provide scientific information and technical advice on the effects of dioxin.²⁸

There have been modest efforts to revitalize joint research on Agent Orange exposure and the effect of dioxin on the people of Vietnam. These studies frequently involve non-government organizations (NGOs) in addition to agencies from both the U.S. and Vietnamese governments. In general, the participation of the NGOs has been welcomed by both the U.S. and Vietnamese government. The first meeting of the Joint Advisory Committee (JAC) on Agent Orange and dioxin was held on June 5 and 6, 2006—more than four years after its creation. Since then, the JAC has met every year.

U.S. Government Assistance

Since the resumption of diplomatic relations, the U.S. government has maintained a comparatively consistent policy on the issue of Agent Orange/dioxin contamination in Vietnam. On the one hand, the U.S. government has been willing to offer some assistance with scientific research to evaluate the extent and severity of dioxin contamination, and, in locations where serious contamination has been found, provide financial and technical assistance with the containment and cleanup effort. On the other hand, the U.S. government has repeatedly reiterated that it “does not recognize any legal liability for damages alleged to be related to Agent Orange.”²⁹ In addition, the U.S. government has continually questioned the credibility of Vietnam’s evidence that the dioxin contained in Agent Orange and other herbicides sprayed during the war are responsible for the various illnesses, health problems, and birth defects prevalent in the Vietnamese population. For example, then U.S. Ambassador to Vietnam Michael W. Marine responded to a question regarding U.S. assistance to “Agent Orange victims,” by saying, “But honestly, I cannot say whether or not I have myself seen a victim of Agent Orange. The reason for that is that we still lack good scientific definitions of the causes of disabilities ... that have occurred in Vietnam.... We just don’t have the scientific evidence to make that statement with certainty.”³⁰

²⁵ The disclosed text of the dispatch, “Joint Research on Health/Environmental Effects of Agent Orange/Dioxin - An Assessment of Vietnamese Attitudes,” is available at http://www.ffrd.org/Agent_Orange/Embassy_memo.pdf.

²⁶ “US Abandons Health Study on Agent Orange,” *Nature*, Vol. 434, April 7, 2005, p. 687.

²⁷ “US Won’t Compensate Vietnam’s Agent Orange Victims: Official,” *Agence France Presse*, June 5, 2006.

²⁸ “US Refuses to Compensate Agent Orange Victims,” *Australian Broadcasting Company*, June 5, 2006.

²⁹ “Testimony of Deputy Assistant Secretary Scot Marciel, Bureau of East Asian & Pacific Affairs, U.S. Department of State,” Subcommittee on Asia, the Pacific, and Global Environment Hearing, *Our Forgotten Responsibility: What Can We Do to Help Victims of Agent Orange?*, May 15, 2008.

³⁰ Embassy of the United States in Vietnam, “Remarks by Ambassador Michael W. Marine,” press release, February 5, 2007.

As a result, the United States government has demonstrated a willingness to participate in programs designed to assess, contain, and clean up dioxin found in Vietnam's physical environment. However, it has been comparatively reluctant to support or assist programs designed to address the health problems of Vietnamese nationals attributed to Agent Orange/dioxin.

To date, Congress has directly or indirectly appropriated \$63.4 million for Agent Orange/dioxin remediation and related health care activities in Vietnam. Of this amount, \$3.9 million was allocated for these purposes by the State Department out of funds appropriated for more general purposes, such as the Economic Support Fund (ESF). Funding levels were relatively low prior to 2007, but have noticeably increased since then. Most of the appropriated funds continue to be directed towards environmental remediation, with smaller amounts being provided for "related health activities."

Assistance Through 2007

U.S. government assistance was almost exclusively in the form of cooperative efforts to identify, contain, and remove dioxin contamination related to the spraying of Agent Orange. According to the testimony of a State Department official before a House subcommittee in May 2008, examples of U.S.-Vietnamese cooperation on Agent Orange include:

- The creation of a Joint Advisory Committee (JAC) to review possible joint activities related to dioxin contamination;
- Joint workshops conducted by the U.S. Department of Defense and the Vietnamese Ministry of National Defence to share historical information on U.S. military operations in Vietnam related to Agent Orange handling and storage;
- A five-year, \$2 million project—involving the U.S. Environmental Protection Agency (EPA) and the Vietnamese Academy of Science and Technology and the Ministry of National Defence—to enhance Vietnam's ability to conduct laboratory analysis of soil and tissue samples; and
- \$400,000 in financial support from the Department of State and the EPA for dioxin mitigation planning assistance in Da Nang.

The U.S. government has provided assistance to health-related programs in Vietnam that were associated with other types of medical conditions, including war-related conditions. For example, Vietnam is one of 15 "focus countries" and is the only Asian country to receive related assistance through the President's Emergency Plan for AIDS Relief (PEPFAR).³¹ Similarly, the United States—via the Agency for International Development and the Leahy War Victims Fund—has provided Vietnam with financial support for assistance programs for people disabled by landmines and unexploded ordnance.³²

According to the Department of State, the United States provided \$40 million in support for "mine-action programs" from 1993 to 2007 and \$43 million in disability assistance from 1989 to 2007 through the Leahy War Victims Fund. Funding for Agent Orange related projects up to 2007

³¹ For more information about the U.S. PEPFAR activities in Vietnam, see CRS Report RL34569, *PEPFAR Reauthorization: Key Policy Debates and Changes to U.S. International HIV/AIDS, Tuberculosis, and Malaria Programs and Funding*, by Kellie Moss.

³² For more information about U.S. unexploded ordnance activities in Vietnam, see the U.S. Department of State's website, "To Walk the Earth in Safety: The U.S. Commitment to Humanitarian Mine Action," at <http://www.state.gov/t/pm/rls/rpt/walkearth/2006/68018.htm>.

amounted to \$2 million.³³ Although the State Department did not provide an itemization of the use of the \$2 million, apparently most of the funds were used for technical and scientific activities.³⁴ Confidential sources report that all of these funds were expended by U.S. government officials or their contractors—none of the funds went to the Vietnamese government or Vietnamese citizens.

The primary forum for U.S. consultation with the Vietnamese government on the issue of Agent Orange has been the JAC. The first JAC meeting was held in Hanoi on June 5 and 6, 2006, during which the Vietnamese delegation “proposed to accelerate cooperation” on the topics of environmental cleanup, care and treatment of dioxin victims, and scientific research. According to the official minutes of the meeting, the first two topics were deemed “outside the scope” of the JAC’s activities. At the second JAC meeting—held on August 14 and 15, 2007, again in Hanoi—the U.S. co-chair stated that JAC was not a “policy making body,” but was a “scientific advisory committee” created to “provide expert scientific consultation to inform AO/dioxin related programs in Vietnam.” The third JAC meeting was held September 8-11, 2008, in Hanoi.³⁵ The meeting focused on various environmental remediation efforts in Vietnam, as well as presentations from various donor organizations working on the Agent Orange/dioxin issue in Vietnam. During its third meeting, the JAC agreed to establish two task forces—one to focus on environmental issue and another to focus on health issues.

Assistance Since 2007

In May 2007, Congress passed the U.S. Troop Readiness, Veterans’ Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (P.L. 110-28) that appropriated \$3 million for assistance to Vietnam for environmental remediation of dioxin-contaminated storage sites and to support health programs in communities near those sites.³⁶ For various reasons, it took over a year for the State Department to determine how to use these funds.

After much consultation, the State Department decided that the administration of the \$3 million would be handled by the U.S. Agency for International Development (USAID). Approximately \$500,000 of the initial \$3 million was to be budgeted to hire and support a full-time environmental health and remediation advisor for two years to be posted at the U.S. Embassy in Hanoi. This position was filled in December 2008.

Half of the \$3 million has been budgeted for environmental containment and remediation planning at the Da Nang airport. Preliminary USAID plans on how to allocate those funds were approved by the U.S. government and presented to representatives of Office 33,³⁷ Vietnam’s Ministry of Defense, and the Vietnamese Academy of Science and Technology (VAST).

³³ Statement of Assistant Secretary for East Asian and Pacific Affairs Christopher R. Hill, Senate Committee on Foreign Relations, Subcommittee on East Asian and Pacific Affairs, March 12, 2008.

³⁴ Personal communications with representative of State Department, April 25, 2008.

³⁵ There have been two subsequent JAC meetings since September 2008.

³⁶ For details, see CRS Report RL33900, *FY2007 Supplemental Appropriations for Defense, Foreign Affairs, and Other Purposes*, coordinated by Stephen Daggett.

³⁷ In 1999, Vietnam created the Office of National Steering Committee for the Overcoming of the Consequences of Toxic Chemicals used by the United States in the War in Vietnam—also known as Office 33 or Committee 33—to coordinate the various programs designed to overcome the various consequences of the use of herbicides during the war, including environmental remediation and health care assistance for people suffering from diseases associated with dioxin exposure.

In February 2009, Office 33 and the United Nations Development Program (UNDP) co-sponsored a roundtable meeting on remediation standards and technology.³⁸ Also attending the meeting were representatives of the U.S. State Department, USAID, and the U.S. Environmental Protection Agency. During the roundtable, the attendees agreed on two goals—immediate containment of dioxin-contaminated soil at the three major known “hot spots” (Bien Hoa, Da Nang, and Phu Cat); and a longer-term goal of dioxin destruction to completely eliminate dioxin from contained soil and sediment. They also discussed a short list of possible technologies (including bioremediation) to pilot test at the identified “hot spots.”

Table I. Congressional Appropriations for Agent Orange/Dioxin Remediation and Health-Related Activities in Vietnam

(in Millions of U.S. Dollars)

Congress	Public Law	Date Enacted	Total Amount	Environmental Remediation	Health-Related Activities
110 th	P.L. 110-28	May 2007	3.0		
111 th	P.L. 111-8	March 2009	3.0		
	P.L. 111-117	December 2009	3.0		
	P.L. 111-212	July 2010	12.0		
112 th	P.L. 112-10	April 2011	18.5	15.5	3.0
	P.L. 112-74	December 2011	20.0	15.0	5.0

Source: CRS research.

Notes: Does not include \$3.9 million allocated for these purposes by the State Department out of funds appropriated for more general uses, such as the Economic Support Fund (ESF).

The 111th Congress appropriated a total of \$18 million for dioxin cleanup in Vietnam and related health services. In addition, the State Department and USAID allocated \$1.9 million in Development Assistance funds for FY2010 for environmental remediation at Da Nang airport.³⁹ In March 2009, the 111th Congress appropriated \$3 million for Agent Orange/dioxin remediation and health care assistance in the vicinity of the Da Nang “hot spot” in the Omnibus Appropriations Act, 2009 (P.L. 111-8). In December 2009, Congress passed the Consolidated Appropriations Act, 2010 (P.L. 111-117), which included \$3 million for dioxin cleanup and related health services in Vietnam. In July 2010, Congress included \$12 million in the Supplemental Appropriations Act, 2010 (P.L. 111-212).

On April 15, 2011, the 112th Congress appropriated in the Department of Defense and Full-Year Continuing Appropriations Act 2011 (P.L. 112-10) \$15.5 million for remediation activities at dioxin contaminated sites in Vietnam, and \$3 million for related health activities—the first time it explicitly divided the funds between the two uses. An additional \$20.0 million was appropriated by the 112th Congress in the Consolidated Appropriations Act, 2012 (P.L. 112-74), with not less than \$15.0 million allocated for “environmental remediation of dioxin contamination at the Da Nang and Bien Hoa airports and other severely contaminated sites,” plus not less than \$5.0

³⁸ Information in this paragraph from correspondence with U.S. Embassy in Vietnam, March 25, 2009.

³⁹ U.S. Congress, House Committee on Foreign Affairs, Subcommittee on Asia, the Pacific, and the Global Environment, *Testimony of Acting Deputy Assistant Secretary Matthew Palmer, Agent Orange in Vietnam: Recent Developments in Remediation*, 111th Cong., 2nd sess., July 15, 2010.

million for “health/disability activities in areas of Vietnam that were targeted with Agent Orange or remain contaminated with dioxin.”⁴⁰ P.L. 112-74 was the first legislation to explicitly appropriate funds for dioxin contaminated locations other than the Da Nang airport.

The conference report accompanying P.L. 112-74 also endorsed language in a Senate Report associated with the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012 (S. 1601) directing USAID, in consultation with the Senate Appropriations Committee, the Department of State, the Government of Vietnam, and “other interested parties” to develop a “comprehensive, multiyear plan” for Agent Orange-related activities in Vietnam within 180 days of the enactment of the law.⁴¹

Obligations

According to information provided by USAID, \$16.5 million of the available funds have been obligated as of June 2012, with plans to obligate an additional \$45.1 million (see **Table 2**). Of the \$16.5 million already obligated, \$11.9 million went to environmental remediation and \$3.1 million was allocated to related health services. Also included in the \$16.5 million in obligations was \$1.5 million allocated to USAID for administration and technical oversight of the appropriated funds. USAID has plans to obligate \$33.4 million for environmental remediation efforts at Da Nang airport, \$8.0 million for “environmental health activities,” \$2.3 million for an environmental assessment of Bien Hoa airport, and \$1.4 million for administrative oversight. Since providing CRS the data contained in **Table 2**, USAID has awarded an additional \$25.3 million in contracts for dioxin remediation, and has announced plans to award \$9 million for health-related activities in dioxin contaminated sites in Vietnam.

A portion of the obligated funds have been used by USAID to hire and support a full-time environmental health and remediation advisor to be posted at the U.S. Embassy in Hanoi, as well as finance the administrative expenses associated with the project. Most of the funds have been awarded as grants to non-government organizations to provide services related the project.

Table 2. USAID Obligations and Planned Obligations of Agent Orange/Dioxin Appropriations

(type and recipient, as of June 2012)

Recipient	Obligated	Planned Obligation
<i>Environmental Remediation</i>		
CDM International, Inc.	\$10,542,276	
TerraTherm International	\$1,336,486	\$19,957,238

⁴⁰ U.S. Congress, Conference Committee, *Military Construction and Veterans Affairs and Related Agencies Appropriations Act, 2012*, Conference Report to Accompany H.R. 2055, 112th Cong., 1st sess., December 15, 2011, H.Rept. 112-331 (Washington: GPO, 2011).

⁴¹ U.S. Congress, Senate Committee on Appropriations, *Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012*, Report to Accompany S. 1601, 112th Cong., 1st sess., September 22, 2011, S.Rept. 112-85 (Washington: GPO, 2011).

Recipient	Obligated	Planned Obligation
To Be Determined:		
• Excavation and Construction		\$13,400,000
• Environmental Assessment at Bien Hoa		\$2,304,000
<i>Related Health Activities</i>		
East Meets West	\$500,000	
Save the Children	\$1,199,980	
Vietnam Assistance for the Handicapped	\$1,288,408	
USAID Global Health Technical Assistance	\$103,000	
To Be Determined		\$8,000,000
<i>Administration and Oversight</i>		
USAID	\$1,537,449	\$1,400,000
TOTAL	\$16,507,559	\$45,061,238

Source: Information provided to CRS by USAID.

Note: Table does not include contracts awarded after June 25, 2012.

CDM International, Inc. has been the main contractor used by USAID to assess the extent and severity of dioxin contamination at Da Nang Airport. It was awarded a \$1.69 million contract in 2009 to conduct an environmental assessment of the site to determine practical options for the decontamination of the affected areas around the airport.⁴² The assessment was concluded in June 2010, and determined that thermal treatment was the most cost-effective method for removing the residual dioxin from the contaminated soil.⁴³ The total cost of thermal treatment is estimated at \$43 million. On December 30, 2010, the two governments signed a memorandum of intent (MOI) for the environmental remediation of dioxin contamination at the Da Nang airport.⁴⁴

In March 2012, USAID contracted *TerraTherm*, a Massachusetts-based environmental remediation company, to design the thermal remediation project to be used at Da Nang airport, as agreed to in the MOI. In June 2012, USAID awarded two contracts related to the dioxin cleanup at Da Nang airport. *CDM Smith*, a Massachusetts-based company, was awarded an \$8.34 million contract for construction management and oversight of the thermal remediation project, in coordination with Vietnam's Ministry of National Defence. Incremental funding of \$6 million was made for FY2012, with the balance to be obligated at a later date still to be determined. *Tetra Tech*, a California-based company, was awarded a \$17.00 million contract for the excavation and construction components of the project. An initial \$13.4 million was obligated at the time the contract was awarded; the balance will be obligated at a later date still to be determined.

A groundbreaking ceremony for the thermal remediation project was held at Da Nang airport on August 9, 2012, with U.S. Ambassador to Vietnam David Shear in attendance. In his remarks, Ambassador Shear stated that the goal is to complete the Da Nang airport cleanup by late 2016.

⁴² Embassy of the United States, Hanoi, "United States Government Provides \$1.69 Million to Prepare for Agent Orange/Dioxin Removal in Danang," press release, October 1, 2009, <http://vietnam.usembassy.gov/pr100109i.html>.

⁴³ Thermal treatment will use in-situ/in-pile thermal desorption destruction. The contaminated soil will be relocated to contained landfills to undergo treatment.

⁴⁴ U.S. Embassy in Hanoi, Vietnam, "Remarks by U.S. Ambassador Michael W. Michalak," press release, December 30, 2010.

He also indicated that the two governments would continue their cooperation on cleaning up dioxin “hot spots” by carrying out an environmental assessment of Bien Hoa airport. In addition, Ambassador Shear announced a three-year, \$9 million health and disability program during the Da Nang event. An initial \$8 million is to be obligated, possibly in FY2012 if the contract is awarded before September 30, 2012. The remaining \$1 million is to be obligated on a yet-to-be-determined date. As of the date of this report, USAID had not reported any obligations of funds for this purpose.

The East Meets West Foundation was awarded a \$500,000 grant to improve the quality of life for persons living with disabilities in Da Nang Province, particularly children with disabilities. Funds were used for medical and social screening for people with disabilities, corrective surgery, physical therapy and rehabilitation services, scholarships for children with disabilities, and community-based rehabilitation. Information provided by USAID describes the program as follows:

Supports improvement of the well being of people with disabilities (PWDs) and children with disabilities (CWDs) in Danang. Specifically, activities provide: 1) medical and social scanning for PWDs and CWDs; 2) corrective surgery; 3) physical therapy and rehabilitation services for non-surgery cases; 4) scholarships to CWDs; 5) the establishment of community-based rehabilitation units, and 6) training to improve skills of medical personnel treating PWDs.⁴⁵

Save the Children was provided a grant in 2009 to expand employment and income-generating activities for people with disabilities and their families living in Da Nang. Information provided by USAID describes the program as follows:

Program provides technical assistance to empower people with disabilities (PWDs) with skills and training to engage successfully in Vietnam’s economic transformation and to lead productive and self-sufficient lives. PWDs learn how to access services and resources, obtain reliable and gainful employment, start a business, increase their awareness of the demand-supply dynamics of the market and the availability of entrepreneurial services. Activities also aim to increase the support and engagement of local government, private sector, and communities to create livelihood opportunities and a disability friendly business environment.⁴⁶

The Vietnam Assistance for the Handicapped was provided a grant in 2009 to help people with disabilities and their families improve their social and economic status and integration, and help local authorities, health service providers, disabled organizations, and others develop and enforce programs that increase resources for disability. Information provided by USAID describes the program as follows:

USAID assistance for people with disabilities (PWDs) in Danang aims to improve their well being and livelihoods by increasing their integration into society through comprehensive rehabilitation services and socio-economic support. The program also strengthens the ability of local service providers and organizations to serve the disabled population. Key activities include: 1) establishing a model for rehabilitation services and a community-based support system to increase access to quality services for PWDs; and 2) improving capacity of self-help groups to access to health and social services, and economic support.⁴⁷

⁴⁵ Text from information provided to CRS by USAID.

⁴⁶ Ibid.

⁴⁷ Ibid.

The Effects of Agent Orange on Vietnam

Virtually every aspect of the effects of Agent Orange on Vietnam is infused with uncertainty and/or controversy. There is some question about the amount of Agent Orange and other herbicides sprayed in Vietnam, as well as the amount of dioxin contained in the Agent Orange used. It is also unclear exactly where the herbicides were sprayed and the amount sprayed at each location. Nor is it known who was exposed to Agent Orange and its dioxin, and for what duration they were exposed. Finally, there is limited information about the long-term effects of Agent Orange on the environment and people of Vietnam.

The uncertainty and controversies are in part attributable to the general “fog of war.” At the time the herbicides were used, there was little consideration within the U.S. military about potential long-term environmental and health effects of the widespread use of Agent Orange in Vietnam. Similarly, both the South Vietnamese and North Vietnamese governments were not keeping detailed troop deployment information in anticipation of future claims of health problems associated with exposure to Agent Orange and dioxin. In addition, after the war ended, many Vietnamese combatants returned to their home towns, far away from the jungles where they once were sprayed with herbicides from U.S. military aircraft.

Given that direct information about Agent Orange exposure is not available, the alternative generally used has been to seek indirect evidence of dioxin exposure. Soil samples taken from supposedly sprayed and unsprayed locations can be analyzed to determine the amount and extent to which Vietnam has been contaminated with dioxin due to Operation Ranch Hand. At the same time, blood and tissue samples can be taken from Vietnamese nationals across the country to determine how much dioxin is present in their systems. To date, relatively few of these studies have been done, in part because of the cost associated with the research, and in part because of the political implications of the findings of such studies.

Although the research on the use of Agent Orange and other herbicides in Vietnam—and the resulting exposure of the people of Vietnam to dioxin—is limited in scale, it is possible to draw a few tentative conclusions from existing studies. First, numerous areas of southern Vietnam were sprayed with Agent Orange and other herbicides during the Vietnam War, with widely varying levels of contamination with dioxin. Some locations were sprayed repeatedly; other locations only once. Second, millions of Vietnamese were directly exposed to dioxin at the time the herbicides were sprayed, and millions more have been exposed to dioxin that remains in the soil and in the sediment of waterways of southern Vietnam.⁴⁸ Third, blood and tissue studies of Vietnamese nationals provide some evidence of higher than normal levels of dioxin in the systems of people presumed to have been exposed to Agent Orange, but methodological problems make interpretation of the data difficult and open to debate. Fourth, research in Vietnam on the long-term health effects of exposure to varying levels of dioxin is limited, making it difficult to firmly establish the connection between dioxin exposure and a variety of health problems occurring among the Vietnamese people with unusually high frequency.

Brief History of the Use of Agent Orange in Vietnam

Agent Orange was a chemical herbicide used from 1961 to 1971 by the U.S. military in the then Republic of Vietnam (a.k.a.—South Vietnam) and portions of the then Democratic Republic of

⁴⁸ Dioxin is not water soluble, but an unknown amount of dioxin has washed into the rivers, streams and coastal waters of Vietnam, and presumably settled into its river and ocean beds.

Vietnam (a.k.a.—North Vietnam) to deny their military enemy cover in Vietnam's dense foliage.⁴⁹ An approximately 50-50 mix of two chemicals—2,4,-D (2,4, dichlorophenoxyacetic acid) and 2,4,5-T (2,4,5 trichlorophenoxyacetic acid)—Agent Orange derived its name from the orange band painted on the side of the 55-gallon drums in which the herbicide was delivered. Agent Orange was manufactured under Department of Defense (DOD) contracts for military-use in Vietnam by several companies, including Diamond Shamrock Corporation, Dow Chemical Company, Hercules Inc., Monsanto Company, T-H Agricultural & Nutrition Company, Thompson Chemicals Corporation, and Uniroyal Inc.

Agent Orange was one of 15 herbicides used during the Vietnam War, principally as part of Operation Ranch Hand, the key component of the U.S. military's overall herbicide program, Operation Trail Dust.⁵⁰ Other herbicides used in Vietnam included Agent Blue, Agent Green, Agent Orange II (a.k.a. Super Orange), Agent Pink, Agent Purple, Agent White, Bromacil, Dalapon, Dinoxol, Diquat, Diuron, Monuron, Tandex, and Trinoxol. However, Agent Orange was the most extensively used herbicide during the war.

A contaminant of the manufacture of Agent Orange (as well as Agents Pink and Purple) was 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a dioxin thought to be responsible for most of the medical problems associated with exposure to Agent Orange. Because TCDD was an unwanted byproduct, its concentration varied by production run, manufacturer, and the proportion of 2,4,5-T in the formulation. A 1978 General Accounting Office (GAO, now known as Government Accountability Office) report indicated that a 1971 DOD analysis of its remaining Agent Orange inventory found TCDD contamination levels ranging from 0.05 to 47.0 parts per million (p.p.m.).⁵¹ Various studies made during and soon after the Vietnam War found lower ranges for TCDD concentration levels in stockpile samples, ranging from 0.05 to 17.0 p.p.m.⁵²

Estimates of Vietnamese Exposure to Agent Orange

In general, research into the level of Vietnamese exposure to Agent Orange and dioxin has followed two different approaches. One approach has attempted to determine how much Agent Orange was sprayed in Vietnam, where and when it was sprayed, and who was in the area when the herbicide was sprayed. From this data, researchers can then determine the level of exposure to Agent Orange and dioxin. The second approach examines the amount of dioxin in blood and tissue samples taken from people in Vietnam, and then infers each person's level of exposure. Because of data and other methodological problems, neither approach has been able to provide conclusive information on the general pattern of Agent Orange and TCDD exposure in Vietnam.

⁴⁹ Operation Ranch Hand was primarily conducted in South Vietnam. However, one of the more heavily sprayed areas was Quang Tri, along the demilitarized zone (DMZ), which resulted in the spraying of some portions of southern North Vietnam. The U.S. military also sprayed herbicides in Cambodia and Laos, but information on those programs is not included in this report.

⁵⁰ For brief military accounts of Operation Ranch Hand, see Major William A. Buckingham, Jr., "Operation Ranch Hand: Herbicides in Southeast Asia," *Air University Review*, July-August 1983; and USAF TSGT Dale K. Robinson's article from the Air Force booklet, "Air Commando, 1950-1975: Twenty-Five Years at the Tip of the Spear."

⁵¹ General Accounting Office, *Use of Agent Orange in Vietnam* (CED-78-158), August 16, 1978.

⁵² See Jeanne Mager Stellman, Steven D. Stellman, Richard Christian, Tracey Weber, and Carrie Tomasallo, "The Extent and Patterns of Usage of Agent Orange and Other Herbicides in Vietnam," *Nature*, Vol. 422, April 2003, for details.

Amount Used

Precise information on how much Agent Orange was sprayed in Vietnam during the war is difficult to find, though several studies estimate the amount in the range of 11 million-12 million gallons. A 1978 GAO report states that 18.85 million gallons of herbicide were applied during the Vietnam War, of which 11.22 million gallons were Agent Orange.⁵³ According to William Buckingham's calculations, Operation Ranch Hand sprayed about 19 million gallons of herbicide, of which 11 million gallons were Agent Orange.⁵⁴ Dale Robinson reports that Operation Ranch Hand dispensed between 17.7 million and 19.4 million gallons of herbicide, of which approximately 10.6 million to 11.7 million gallons were Agent Orange.⁵⁵ A 2003 study of the extent of use and distribution patterns for herbicides based on DOD records estimated between 19.3 million and 20.3 million gallons of herbicide were used in Vietnam, of which up to 12.1 million gallons were Agent Orange.⁵⁶ A study by H. Lindsey Arison found that 19.4 million gallons of herbicides were used in Vietnam, of which 11.7 million gallons were Agent Orange.⁵⁷

⁵³ GAO, *op. cit.*

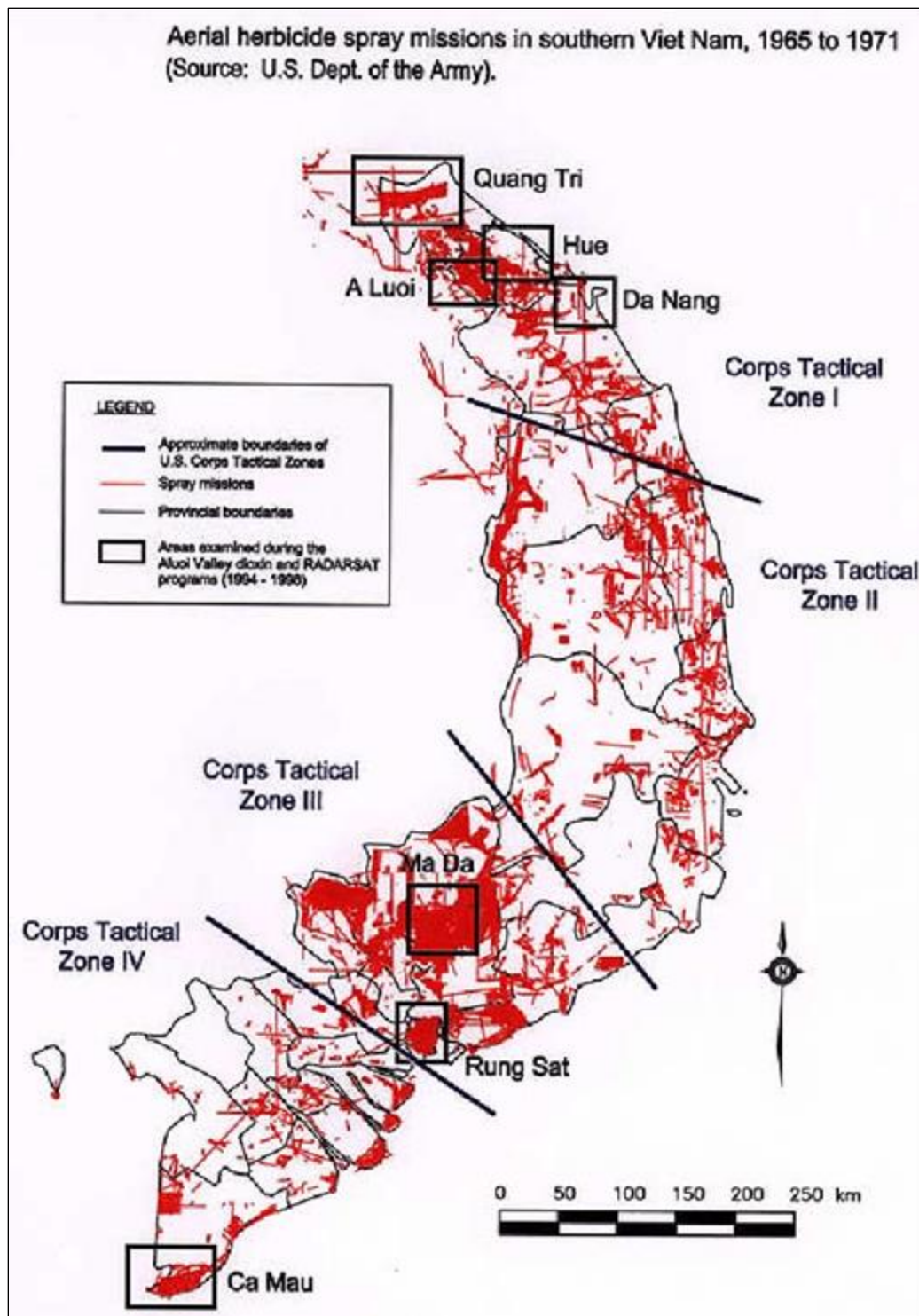
⁵⁴ Buckingham, *op. cit.*

⁵⁵ Robinson, *op. cit.*

⁵⁶ Stellman, et al., *op. cit.*

⁵⁷ H. Lindsey Arison III, "The Herbicidal Warfare Program in Vietnam, 1961-1971, Operations Trail Dust/Ranch hand," July 12, 1995, available online at <http://www.utvet.com/agentorange2.html>.

Figure 2. Map of Areas of Vietnam Sprayed with Herbicides



Exposure

Data on exposure to Agent Orange for Vietnamese nationals are even more difficult to determine for several reasons. First, while official records for Operation Ranch Hand are available, it is difficult to be certain about how much herbicide was sprayed on what locations due to mitigating combat conditions.⁵⁸ Second, in addition to the areas intentionally exposed to Agent Orange, an unknown amount of herbicide was leaked or spilled on military bases.⁵⁹ Third, it is difficult to correlate the presence of Vietnamese nationals in exposed areas during or soon after the distribution of Agent Orange in a location. Fourth, while the average U.S. Vietnam veteran served for six months in Vietnam, Vietnamese nationals have been living and working in potentially dioxin contaminated areas for years. Fifth, the scientific tests on soil and tissue samples are expensive. The typical cost of determining the dioxin level in one person is \$1,000. The Vietnamese government states it lacks the financial resources to conduct comprehensive exposure studies.

Exposure studies generally fall into two types: (1) estimates of the concentration of Agent Orange applied or found at studied locations; and (2) tests to determine the concentration of dioxin in the tissue samples of persons who may have been exposed to Agent Orange during the Vietnam War.

In part because of difficulties in determining where, when and how much Agent Orange was distributed in different locations in Vietnam, there are also varying estimates on the number of Vietnamese nationals who were exposed.

Concentrations

A 2005 study of the concentration of Agent Orange distribution in Vietnam determined that an estimated 1.7 million hectares (4.2 million acres) were sprayed with herbicides containing 2,4,5-T, and by extension, containing TCDD.⁶⁰ **Figure 2** shows the sprayed areas.

According to the Vietnamese government, about 12,000 square miles (9.6%) of the nation was sprayed with herbicides during the war.⁶¹ Over 10,000 square miles were sprayed more than twice and over 1,300 square miles were sprayed more than 10 times. Sprayed areas are distributed across much of southern Vietnam, ranging from Quang Tri to the north to Ca Mau in the South.

A 2005 article cited evidence of Agent Orange distribution levels ranging from 185 liters per hectare (l/ha) to 21,007 l/ha.⁶² Another study concluded “the residual levels of wartime Agent Orange dioxin (TCDD) in soils of southern Vietnam are generally at or below background levels found in industrialized nations of North America.”⁶³ However, several researchers maintain that

⁵⁸ According to Stellman, et al., planes on occasion dumped their load of herbicide on non-targeted locations as part of an evasive maneuver or as the result of a plane crash.

⁵⁹ According to several cited sources, DOD records for Operation Ranch Hand record multiple cases of herbicide leakages or spills at airbases.

⁶⁰ Stellman, et al., op. cit.

⁶¹ Ministry of Natural Resources and Environment, *Human and Environmental Consequences of Agent Orange/Dioxin in Viet Nam: Overcoming Activities*, pamphlet. The total land area of Vietnam is 125,622 square miles, or a little larger than the State of New Mexico.

⁶² Michael G. Palmer, “The Legacy of Agent Orange: Empirical Evidence from Central Vietnam,” *Social Science & Medicine*, vol. 60 (2005), pp. 1061-1070. One liter = 0.264172052 U.S. gallons; 1 hectare = 2.47105381 acres.

⁶³ L.W. Dwernychuk, T.M. Hung, T.G. Boivin, G.S. Bruce, P.T. Dung, L.K. Son, C.T. Hatfield, N.T. Dung, J.A. Allen, D.D. Nhu, P.V. Thuc, D.J. Moats, and L. Borton, “The Agent Orange Dioxin Issue in Viet Nam: A Manageable Problem,” Hatfield Consultants, Ltd., paper presented at the 26th International Symposium on Halogenated Persistent Organic Pollutants—Dioxin 2006 held on August 21-25, 2006, in Oslo, Norway.

Vietnam's frequent and heavy rains have probably washed most of the dioxin out of the soil of Vietnam during the 40-50 years since Agent Orange was sprayed.

There are specific locations where measured TCDD concentrations remain high, despite the passage of over three decades. The main "dioxin hot spots" are located in and around the military bases that served as hubs for Operation Ranch Hand, including the airbases at Bien Hoa, Da Nang, Nha Trang, and Phu Cat. In addition, the A Luoi (or A Shau) Valley, south of Quang Tri and west of Da Nang, was considered an important segment of the Ho Chi Minh Trail and was therefore heavily sprayed. The former U.S. military base in the A Luoi Valley has been identified as another "hot spot."

One study of Da Nang airbase found soil concentrations of "TCDD toxic equivalents" (TEQ) of up to 365 parts per billion (p.p.b.)—365 times the international maximum level of 1.0 p.p.b.⁶⁴ Seventeen out of the 23 soil samples taken at Da Nang airbase exceeded the international maximum standard.⁶⁵ A study of soil samples from the Bien Hoa airbase found one sample with a TEQ concentration at over 1,000 p.p.b.⁶⁶ By comparison, the maximum concentration of TCDD found at Love Canal, NY, was 17,200 p.p.b.; at Times Beach, MO, the maximum concentration was 1,750 p.p.b. Both U.S. communities were evacuated after evidence of dioxin contamination was found.⁶⁷

Tissue Samples

Another method of determining exposure levels to Agent Orange and TCDD is to take tissue samples—usually blood, breast milk, or adipose tissue⁶⁸—from people who may have been exposed and compare the presence of TEQ to a control group who presumably were not exposed. A 1995 study of over 3,200 Vietnamese nationals living in sprayed and unsprayed areas of Vietnam found elevated TEQ levels for people residing in southern Vietnam and presumably more heavily exposed to Agent Orange when compared to residents of northern Vietnam who were less likely to have been exposed to Agent Orange.⁶⁹ Average blood levels of TEQ were nearly six times higher among the people from sprayed areas, average breast milk levels were nearly four times higher, and average adipose levels were over 24 times higher.⁷⁰ A separate study of blood dioxin levels of Da Nang residents reported TCDD concentrations "more than 100 times globally acceptable levels."⁷¹ Elevated TCDD concentrations were also found in blood samples of Bien Hoa residents.⁷²

⁶⁴ T.G. Boivin, K.S. Le, L.W. Dwernychuk, M.H. Tran, G.S. Bruce, N.H. Minh, N.T. Tran, K.S. Trinh, T.D. Phung, D. Moats, J.A. Allen, L. Borton, and M. Davies, "Agent Orange Dioxin Contamination in the Environment and Human Population in the Vicinity of Da Nang Airbase, Viet Nam," Hatfield Consultants, Ltd.

⁶⁵ Ibid.

⁶⁶ Boivin, et al., op. cit.

⁶⁷ E.J. Dionne, Jr. "Ultrahigh Level of Poison Cited at Love Canal," *New York Times*, July 13, 1982.

⁶⁸ Adipose tissue is specialized connective tissue that functions as the major storage site for fat in the human body.

⁶⁹ Arnold Schecter, Le Cao Dai, Le Thi Bich Thuy, Hoang Trong Quynh, Dinh Quang Minh, Hoang Dinh Cau, Pham Hoang Phiet, Nguyen Thi Ngoc Phuong, John D. Constable, Robert Baughman, Olaf Pöpke, J.J. Ryan, Peter Fürst and Seppo Räsänen, "Agent Orange and the Vietnamese: The Persistence of Elevated Dioxin Levels in Human Tissues," *American Journal of Public Health*, Vol. 84, No. 4 (April 1995), pp. 516-522.

⁷⁰ Ibid.

⁷¹ Boivin, et al., op. cit.

⁷² Ibid.

Studies of U.S. Vietnam War veterans to determine dioxin concentrations in their bodies have obtained seemingly contradictory results. A 2006 study of U.S. Army Chemical Corps Vietnam War veterans revealed statistically significant elevated TCDD levels in blood samples for veterans who reported spraying Agent Orange when compared to veterans who reported they had not sprayed Agent Orange.⁷³ A 1988 study of blood and adipose tissue sample from Vietnam veterans found higher TCDD levels when compared to a control group, leading the authors to conclude, “it is likely that the elevated TCDD levels arose from wartime exposure.”⁷⁴

However, other studies failed to find elevated TCDD levels among Vietnam veterans. A second 1988 study, which compared U.S. veterans who served in part of Vietnam “heavily sprayed” with Agent Orange to veterans who did not serve in Vietnam, found the TCDD levels in the two groups were “nearly identical.”⁷⁵ A third 1988 study, which compared TCDD levels in adipose tissue from Vietnam veterans, non-Vietnam veterans, and non-veterans, also revealed no significant difference between the three study groups.⁷⁶

Some scientists maintain that the apparent contradictions in the study results may reflect differences in the circumstances surrounding Vietnam veterans’ exposure to Agent Orange.

Vietnam Red Cross List of Diseases Caused by Agent Orange/Dioxin

(combined 1998 and 2000 lists)

- Acute, chronic, and subacute peripheral neuropathy
- Chloracne
- Diabetes (Type 2)
- Hepatoma
- Hodgkin’s disease
- Lipid metabolism
- Malignant (non-Hodgkin’s) lymphoma
- Multiple myeloma (Kahler’s disease)
- Porphyria cutanea tarda
- Prostate cancer
- Reproductive abnormalities
- Respiratory cancers (bronchial, tracheal, and laryngeal)
- Sarcoma
- Spina bifida

Source: Vietnamese official

U.S. Department of Veterans Affairs List of Diseases and Conditions Presumed to be Related to Service- Related Exposure to Agent Orange/Dioxin

Chloracne
Non-Hodgkin’s lymphoma
Soft tissue sarcoma
Hodgkin’s disease

⁷³ Han K. Kang, Nancy A. Dalager, Larry L. Needham, Donald G. Patterson, Jr., Peter S. J. Lees, Katherine Yates, and Genevieve M. Matanoski, “Health Status of Army Chemical Corps Vietnam Veterans who Sprayed Defoliant in Vietnam,” *American Journal of Industrial Medicine*, Vol. 49 (2006), pp. 875-884.

⁷⁴ P. C. Kahn, M. Gochfeld, M. Nygren, M. Hansson, C. Rappe, H. Velez, T. Ghent-Guenther and W. P. Wilson, “Dioxins and Dibenzofurans in Blood and Adipose Tissue of Agent Orange-Exposed Vietnam Veterans and Matched Controls,” *Journal of the American Medical Association*, Vol. 259, No. 11 (March 18, 1988), pp. 1661-1667.

⁷⁵ The Centers for Disease Control Veterans Health Studies, “Serum 2,3,7,8-tetrachlorodibenzo-p-dioxin levels in US Army Vietnam-era Veterans,” *Journal of the American Medical Association*, Vol. 260, No. 9 (September 2, 1988), pp. 1249-1254.

⁷⁶ Han K. Kang, Kevin K. Watanabe, Joseph Breen, Janet Reemers, Margaret G. Conomos, John Stanley, and Michele Flicker, “Dioxin and Dibenzofurans in Adipose Tissue of US Vietnam Veterans and Controls,” *American Journal of Public Health*, Vol. 81, No. 3 (March 1991), pp. 341-349.

There seems to be a general pattern that veterans who handled or sprayed Agent Orange have elevated levels of TCDD. Results are less consistent for veterans who operated in areas sprayed with

Agent Orange. Some studies find elevated TCDD levels, others do not. Some scientists speculate that studies comparing Vietnam veterans to other control groups fail to find differences in the TCDD levels because the Vietnam veterans include people who were exposed to Agent Orange as well as people who were not exposed.

Studies have also examined food produced in contaminated areas to determine if they contain significantly elevated levels of TCDD or other dioxins. One study of various food crops and livestock from the A Luoi Valley revealed negligible TCDD levels in rice, manioc, and vegetable oil samples, but exceptionally high TCDD levels in some duck fat and fish fat samples.⁷⁷ It is thought that the higher levels in fish and ducks are an indication that TCDD remains in the sediment of Vietnam's rivers, streams, lakes, and ponds. Other studies have also found evidence of elevated dioxin levels in Vietnamese immigrants from non-sprayed areas and children born after the war, as well as elevated TCDD levels in food and soil samples from the study area.⁷⁸

Porphyria cutanea tarda
Multiple myeloma
Respiratory cancers (including lung, larynx, trachea, and bronchus)
Prostate cancer
Acute and subacute transient peripheral neuropathy
Type 2 diabetes
Chronic lymphocytic leukemia
Primary (AL) amyloidosis
For children of all exposed veterans:
• Spina bifida (but not spina bifida occulta)
For children of exposed female veterans:
• Achondroplasia
• Cleft lip and cleft palate
• Congenital heart disease
• Congenital talipes equinovarus (clubfoot)
• Esophageal and intestinal atresia
• Hallerman-Streiff syndrome
• Hip dysplasia
• Hirschprung's disease (congenital megacolon)
• Hydrocephalus due to aqueductal stenosis
• Hypospadias
• Imperforate anus
• Neural tube defects
• Poland syndrome
• Pyloric stenosis
• Sundactyly (fused digits)
• Tracheoesophageal fistula
• Undescended testicle
• Williams syndrome
Source: National Organization on Disability

Number of Vietnamese Exposed

Determining how many Vietnamese nationals were exposed to Agent Orange during and after the Vietnam War is both complicated and controversial. One study estimated the number of Vietnamese nationals exposed to Agent Orange and/or dioxin ranged from 2.1 million to 4.8 million.⁷⁹ Vietnam Association of Victims of Agent Orange/Dioxin (VAVA) estimates that 2.1 million to 4.8 million Vietnamese were exposed to Agent Orange during the war and at least 3 million suffer serious health problems due to that exposure.⁸⁰ According to MOLISA, over

⁷⁷ L. Wayne Dwernychuk, Hoang Din Cau, Christopher T. Hatfield, Thomas G. Boivin, Tran Manh Hung, Phung Tri Dung, and Nguyen Dinh Thai, "Agent Orange/Dioxin Hot Spots—A Legacy of U.S. Military Bases in Southern Viet Nam," paper presented at Viet Nam—United States Scientific Conference on Human Health and Environmental Effects of Agent Orange/Dioxin, Hanoi, March 2002.

⁷⁸ Arnold Schecter, Hoang Trong Quynh, Marian Pavuk, Olaf Pöpke, Rainer Malisch, and John D. Constable, "Food as a Source of Dioxin Exposure in the Residents of Bien Hoa City, Vietnam," *Journal of Occupational and Environmental Medicine*, Vol. 45, No. 8, August 2003.

⁷⁹ Stellman, et al., op. cit.

⁸⁰ Conversation with representative of VAVA, Hanoi, December 10, 2008.

365,000 Vietnamese veterans and their children and grandchildren have medical conditions attributed to exposure to dioxin.⁸¹

Vietnam's Health Claims

The Vietnamese government maintains that TCDD is harming the health of its people in several ways. It asserts that Vietnamese civilians and soldiers who were directly exposed to Agent Orange during the war are experiencing certain diseases and health problems at a rate higher than the nation's unexposed population. Additionally, it maintains that people living in areas with residual TCDD in the soil and water are also suffering from health complications related to the aftereffects of Operation Ranch Hand. Finally, it argues that the children and grandchildren of people exposed to dioxin have an unusually high level of birth defects and/or health problems.

In 1998 and again in 2000, the Vietnam Red Cross (VRC) compiled lists of diseases it associated with Agent Orange/dioxin exposure (see textbox on previous page). In March 2008, Vietnam's Ministry of Health reportedly compiled a confidential list of 17 diseases and deformities that it maintained were related to exposure to dioxin. The VRC list contained many of the same diseases identified by the U.S. Department of Veterans Affairs (VA) as being related to exposure to Agent Orange, including bronchial carcinoma, tracheal cancer, laryngeal neoplasm, prostate cancer, and type 2 diabetes (see textbox on the previous page). Other diseases on the VRC's list are not recognized by the U.S. government as being related to dioxin exposure. The Ministry of Health also considers a number of congenital deformities and mental disorders in the children of those exposed to TCDD as being dioxin-related, but are not found on the VA list.

In the last few years, much of the Vietnamese government's concern about the effects of Agent Orange has focused on the affected children and their families. Because the deformities and disorders are frequently quite severe, the children often require continual care. Given the current status of Vietnam's health care system, it is not possible to place many of the children in managed-care facilities. As a result, most of the children are cared for by their families. This not only creates a financial burden for the families, it typically means a significant loss of household income as at least one person must remain at home with the affected child or children.

Cleanup Efforts

The prospects for cleaning up the dioxin in Vietnam distributed by the spraying of Agent Orange and other herbicides are complicated by the area sprayed, the passage of time, and a general lack of resources. There is a supposition that sunlight, Vietnam's episodic heavy rains and the passage of time have probably removed most of the dioxin from sprayed areas or lowered concentration levels below the danger level, but there are no definitive studies to verify this notion.

In addition, political and other considerations have tended to shift the focus on Agent Orange cleanup efforts towards the confinement and cleanup of dioxin from the identified "hot spots" with elevated levels of dioxin in the soil, such as the airbases used by Operation Ranch Hand. Both the Vietnamese and U.S. governments have had reasons to avoid or delay consideration of the topic of Agent Orange cleanup. It is thought that Vietnam avoided raising the issue prior to its obtaining NTR in 2002 and "permanent normal trade relations" (PNTR) status with the United States in 2006 and membership in the World Trade Organization (WTO) in 2007. The U.S.

⁸¹ Conversation with representative of MOLISA, Hanoi, December 10, 2008.

government purportedly also has avoided the issue because of concerns about potential liability issues and/or presumptions of responsibility.⁸²

However, since Vietnam obtained PNTR status and joined the WTO, the issue of Agent Orange and its cleanup has risen in prominence in bilateral relations.⁸³ In February 2007, the United States announced it would provide \$400,000 to support mitigation planning for the dioxin cleanup of the Da Nang airbase.⁸⁴ In June 2007, the DOD presented the Vietnamese Ministry of Defense with a detailed map of herbicide storage locations from 1962 to 1971 during a Hanoi workshop on chemical herbicide use during the Vietnam War.⁸⁵

The official entity responsible for the bilateral efforts to address the environmental and health effects of dioxin in Vietnam is the Joint Advisory Committee (JAC). Although the two nations agreed to form the JAC in 2002, it did not hold its first meeting until 2006 due to disagreements between the United States and Vietnam over the role of the JAC.⁸⁶ The seventh meeting of the JAC was held in September 2012 in Hanoi. The U.S. delegation to the JAC consists of representatives from the Department of Defense, the Department of State, the Environmental Protection Agency, the U.S. Centers for Disease Control and Prevention (CDC), and USAID. The Vietnamese delegation includes representatives from Office 33, the Ministry of Defense, the Ministry of Foreign Affairs, the Ministry of Health, the Ministry of Natural Resources and the Environment, and the Vietnam Association of Science and Technology. In addition, a group called the U.S.-Vietnam Dialogue Group on Agent Orange/Dioxin (Dialogue Group), established by the Ford Foundation, is regularly consulted on the cleanup process.⁸⁷

The cost and scope of cleaning up Vietnam's dioxin "hot spots" have gradually increased over time. In 2006, the Vietnamese government estimated the cost for the detoxification of the Da Nang and the Bien Hoa airbases could reach \$10 million.⁸⁸ In November 2008, the estimated cost of cleaning up the Da Nang airbase was raised to \$17 million.⁸⁹ According to then-Acting Deputy Assistant Secretary, Bureau of East Asian and Pacific Affairs Matthew Palmer in his July 2010 testimony before the Subcommittee on Asia, the Pacific, and the Global Environment of the House Committee on Foreign Affairs, USAID has estimated the remediation of Da Nang will cost at least \$34 million.⁹⁰ In his testimony at the same hearing, USAID Director of Technical Support John Wilson stated that the current plan was to use thermal desorption destruction technology to

⁸² For more information on the mutual reluctance of the Vietnamese and U.S. government to raise the issue of Agent Orange, see Robert Dreyfuss, "Apocalypse Still," *Mother Jones*, January 2000.

⁸³ The United States extended PNTR status to Vietnam in December 2006, and Vietnam became a member of the WTO on January 1, 2007. For details, see CRS Report RL33316, *U.S.-Vietnam Relations in 2008: Background and Issues for Congress*, by Mark E. Manyin.

⁸⁴ "US Gives Vietnam \$400,000 to Plan Clean-up of Agent Orange Hotspot," Associated Press, February 9, 2007.

⁸⁵ "US, Vietnam Continue Wartime Toxin Cleanup Efforts," *Thanh Nien News*, June 21, 2007.

⁸⁶ The Vietnamese government wanted the JAC to proceed with plans for environmental remediation; the U.S. government preferred to focus on areas of scientific cooperation.

⁸⁷ The Dialogue Group includes U.S. representatives from the American Association for the Advancement of Science, the Aspen Institute, the Ford Foundation, and the National Organization on Disability; Vietnamese members include representatives from Ngoc Tam Hospital Corporation, the Vietnamese Communist Party's External Relations Commission, the Vietnamese National Assembly, Vietnam National University, and the Vietnam Veterans Association.

⁸⁸ "Vietnam to Clean Dioxin in Hot Spots," *Thanh Nien News*, July 19, 2006.

⁸⁹ Conversation with Charles R. Bailey, Director of the Special Initiative of Agent Orange/Dioxin of the Ford Foundation, November 26, 2008.

⁹⁰ Available online at <http://www.state.gov/p/eap/rls/rm/2010/07/144702.htm>.

remove the dioxin from the affected soil at the Da Nang airport.⁹¹ According to USAID, the cost of remediating the Da Nang airport has been increased to \$43 million.⁹²

As the cost and size of the cleanup efforts have risen, the estimated time for their completion has been delayed. The *Voice of Vietnam*, a Vietnamese government-run radio station, reported on February 15, 2008, that the cleanup of the Da Nang airbase was expected to be completed by the end of 2008.⁹³ However, issues concerning the manner by which to decontaminate the soil, as well as the recent identification of a new “hot spot” at the Da Nang airbase by the U.S. Department of Defense, have delayed completion of the cleanup effort.⁹⁴ In 2010, USAID projected the cleanup at Da Nang would be completed by the end of FY2013, if sufficient funding was made available. As of August 2012, the estimated date of completion of the thermal remediation of Da Nang airport has been moved to late 2016.

While the total cost and timing of the cleanup of the Da Nang airport remains uncertain, the two governments have agreed on the method to remove the dioxin from the contaminated soil. After consideration of several different methods, thermal remediation using in-pile thermal desorption (IPTD) technology was chosen as being the most cost-effective, reliable, and practical method for the Da Nang airport project. TerraTherm, the company awarded the remediation contract, intends to use a combination of conductive thermal heating elements and negative pressure (partial vacuum) to circulate heat throughout the contaminated soil to break down the dioxin into non-toxic compounds. TerraTherm reportedly will excavate and treat 72,900 cubic meters of soil in two stages in an above-ground, covered pile located at the airport.⁹⁵ The estimated size of the thermal pile is 100 meters long, 70 meters wide, and 8 meters tall. To break down the dioxin, the contained soil will be heated to 335°C (635°F) until such time as the soil’s concentration of dioxin is less than 150 parts per trillion (ppt). A groundbreaking ceremony for the remediation project was held in August 2012.

Information on the status of cleanup projects on hot spots other than Da Nang airport is limited. The Vietnamese military has begun cleanup operations at the Bien Hoa airbase, with an estimated cost of \$4 million-\$5 million.⁹⁶ There is limited evidence of detoxification efforts undertaken in areas heavily sprayed with Agent Orange. One area where the Vietnamese government—with the assistance of international agencies such as the Asian Development Bank and other contributors—has attempted to address the long-term damage caused by Agent Orange is the rehabilitation of affected forestland.⁹⁷

The Vietnamese government asserts it lacks the financial resources to undertake the cleanup projects on their own. In addition, other war-related projects—such as the removal of unexploded

⁹¹ U.S. Congress, House Committee on Foreign Affairs, Subcommittee on Asia, the Pacific, and the Global Environment, *Agent Orange: Recent Developments in Remediation*, 111th Cong., 2nd sess., July 15, 2010.

⁹² CRS correspondence with USAID.

⁹³ “Da Nang to be Free of Dioxin in 2008,” *Voice of Vietnam*, February 15, 2008.

⁹⁴ The third “hot spot” at the Da Nang airbase is at the location where a DOD-contracted Taiwanese company gathered the remaining Agent Orange for shipment to Johnston Island as part of Operation Pacer Ivy which began in September 1971. The Agent Orange was shipped to Johnston Island in April 1972. For more information about Operation Pacer Ivy, see A. Young, *The History, Use, Disposition and Environmental Fate of Agent Orange*, Springer, 2009, pp 121-134.

⁹⁵ “US Agency to Conduct High-Tech Dioxin Cleanup at Da Nang Airport,” *Thanh Nien News*, May 9, 2012.

⁹⁶ Conversation with Charles R. Bailey, Director of the Special Initiative of Agent Orange/Dioxin of the Ford Foundation, November 26, 2008.

⁹⁷ For one account of the forest rehabilitation effort, see Christie Aschwanden, “Through the Forest, a Clearer View of the Needs of a People,” *New York Times*, September 18, 2007.

ordnance and care of Vietnam's war veterans—require significant financial resources, making it difficult to allocate more resources to Agent Orange and dioxin. The United Nations Development Program (UNDP) announced in August 2007 it would provide \$350,000 in financial support for the cleanup of the airbases at Da Nang, Bien Hoa, and Phu Cat.⁹⁸ The Czech government has also offered assistance with the remediation of Phu Cat. According to UNDP estimates, it will cost nearly \$51 million to clean up all three hotspots.⁹⁹

The Dialogue Group's Plan of Action

In June 2010, the Dialogue Group—with the assistance of the Aspen Institute—released a proposed 10-year “Declaration and Plan of Action” to address the legacy of Agent Orange in Vietnam.¹⁰⁰ The proposed plan would be carried out in three phases, with an estimated cost of \$300 million. The plan is divided into remediation efforts and services for people with disabilities linked to dioxin. The remediation efforts are projected to cost \$97.7 million; the services to people with disabilities are estimated at \$202.3 million.

The first phase of the remediation plan would last three years with an estimated cost of \$29.7 million, and would focus on the cleanup of the Da Nang site. The second phase would last four years and cost an estimated \$50.0 million, and clean up the hot spots at Phu Cat and Bien Hoa, as well as reforest affected areas in A Luoi, Ma Da, and Ngoc Hien. The third and final phase would last three years with an estimated cost of \$18.0 million, and would primarily address the remediation and reforestation of secondary hot spots.

The Dialogue Group's proposed plan for services for people with disabilities is also divided into three phases. The first phase would be three years in duration, costing \$68.3 million, involving a national survey of disabilities in Vietnam and training of health care providers to improve services to people with disabilities. The second phase would run for four years with an estimated cost of \$125 million to establish a bio-monitoring program for people living near hot spots and a district-level early identification/early intervention program for children with disabilities. The third phase would last three years and cost \$9.0 million, and would center on evaluating the various service programs being provided to people with disabilities.

The Dialogue Group did not stipulate how the Plan of Action was to be funded. It did, however, state that “the U.S. government should play a key role in meeting these costs, along with public and private donors, supplementing an appropriate continuing investment from the government and people of Vietnam.”

In May 2012, the Dialogue Group released its Second Year Report on the Declaration and Plan of Action.¹⁰¹ The report reviewed the developments of the year, including congressional appropriations, funding provided by the Vietnamese government, and private contributions. It also updated the projected costs of environmental remediation of dioxin “hot spots.” The Dialogue Group projects the cost of dioxin cleanup at Da Nang at \$43 million; at Bien Hoa at \$85 million; at Phu Cat at \$5 million; and at lesser sites at \$17 million—raising the total remediation cost to \$150 million. Similarly, costs of health-related services to Agent Orange/dioxin victims were increased from \$200 million to \$300 million. The Dialogue Group suggested that the U.S.

⁹⁸ “UNDP Helps Clean Dioxin Hotspots in Vietnam,” *Saigon Times*, August 28, 2007.

⁹⁹ *Ibid.*

¹⁰⁰ U.S.-Vietnam Dialogue Group on Agent Orange/Dioxin, *Declaration and Plan of Action: Addressing the Legacy of Agent Orange in Vietnam*, The Aspen Institute, Hanoi and Washington, DC, June 2010.

¹⁰¹ U.S.-Vietnam Dialogue Group on Agent Orange/Dioxin, *Second Year Report*, Washington, DC, and Hanoi, May 2012.

government provide \$65 million each year for five years (\$325 million), and other groups provide an additional \$17 million per year.

Vietnam's Assistance to the Victims¹⁰²

There is little publicly available information on Vietnam's assistance program for people exposed to Agent Orange, and what is available is often contradictory. In addition, there are differing views within the Vietnamese government on the importance of the Agent Orange/dioxin issue. In general, Vietnam's Ministry of Defense, MOLISA, veterans, and victims support groups would like to see more help from the United States, while MOFA and the Ministry of Agriculture and Rural Development (MARD) do not want the AO issue to cause problems in bilateral relations with the United States or with agricultural exports.¹⁰³ The following summary represents the best compilation of information possible given the current level of disclosure about Vietnam's assistance programs.

Office 33 works with Vietnam's Ministry of Health (MOH) and Ministry of Health and the Ministry of Labour, War Invalids, and Social Affairs (MOLISA) to provide special assistance to Vietnamese presumed to be suffering from conditions related to exposure to Agent Orange. People who have certain medical conditions are eligible to receive a disability stipend from Vietnam's AO Central Payments Programme (see details below) of up to 300,000 Vietnamese dong (\$20) per month.¹⁰⁴ According to one source, the Vietnamese government categorizes people eligible for income supplements into three groups: (1) those who have partially or totally lost the ability to work; (2) children with deformities or who have lost the ability to work; and (3) orphans with deformities or who are unable to work.¹⁰⁵ One study estimated the total Vietnamese budget for Agent Orange income supplements in 2000 at \$41 million.¹⁰⁶ Another source reports that the Vietnamese government is paying about \$76 million per year in income supplements to people with disabilities caused by Agent Orange/dioxin.¹⁰⁷ The annual cost of providing a \$20 per month stipend to all of Vietnam's estimated 2.1 million-4.8 million "victims" of Agent Orange would be \$500 million to \$1.2 billion.

Vietnam's central government also works closely with private and provincial government agencies providing assistance to people with medical conditions associated with Agent Orange/dioxin exposure. On July 24, 1998, the VRC established the Agent Orange Victims Protection Fund. Various national organizations, such as Vietnam Association of Veterans, Confederation of Vietnam Labour Unions, Vietnam Farmers Association, Vietnam Women's Union, Vietnam Lawyers Association, and the Ho Chi Minh Youth Union, contributed to the central fund. In addition, there are 57 Agent Orange Victims Protection Funds at the provincial

¹⁰² Portions of this section and following sections of the report were originally written by Evan Coutts, a previous intern for the Congressional Research Service.

¹⁰³ For example, the Ministry of Agriculture and Rural Development is concerned that highlighting the continued presence of dioxin in Vietnam may lead other nations to ban the import of agricultural and aquatic goods from Vietnam for health reasons.

¹⁰⁴ Tom Fawthrop, "Agent Orange Victims Sue Monsanto," *Corpwatch*, November 4, 2004. For comparison, the U.S. State Department estimates that Vietnam's per capita GDP in 2007 was approximately \$70 per month.

¹⁰⁵ Michael G. Palmer, "The Legacy of Agent Orange: Empirical Evidence from Central Vietnam," *Social Science and Medicine*, Vol. 60 (2005), pp. 1061-1070.

¹⁰⁶ *Ibid.*

¹⁰⁷ Conversation with Charles R. Bailey, ex-Director of the Special Initiative of Agent Orange/Dioxin of the Ford Foundation, November 26, 2008.

level. Between 1998 and 2004, the VRC fund raised 23 billion dong (\$1.4 million) and provincial funds raised 50 billion dong (\$3.1 million) for programs to provide aid to people who were exposed to dioxin.

Government Support

On June 1, 2012, Prime Minister Nguyễn Tấn Dũng approved the “National Action Plan to Overcome Fundamental Consequences of Toxic Chemicals Used by the U.S. in the War in Vietnam to 2015 and Oriented to 2020.”¹⁰⁸ The main objectives of the plan are to decontaminate the most heavily contaminated areas, plant trees on 300,000 hectares of decontaminated land, provide assistance to all dioxin victims who are relatives of people who “took part in the resistance war,” offer allowances and health insurance for people with disabilities, and enhance research of toxic chemicals. The decision also assigns specific tasks to Office 33, the government ministries, and the local governments as part of the implementation of the national action plan. Office 33 is responsible for the coordination of the national effort.

A recent focus of the Vietnamese government’s efforts on Agent Orange/dioxin is the identification of people affected by Agent Orange/dioxin and ensuring that they receive their monthly stipend from the AO Central Payments Programme. Identifying those with diseases or disabilities directly related to dioxin is done at the local level according to standards put in place by MOLISA.¹⁰⁹ The Medical Test Boards of cities, provinces, and branches “determine the extent to which the victims have been infected, their deformities and damages to their health.”¹¹⁰ The district files the paperwork with MOLISA and, if approved, the funds for the stipends are distributed. According to a 2006 MOLISA report, approximately half of the households with disabled members were receiving either direct income support through the AO Central Payments Programme, free medical treatment, and/or a Health Insurance Card.¹¹¹

AO Central Payments Programme

The Vietnamese government’s main effort in assisting those affected by Agent Orange is the AO Central Payments Programme. Established in 2000, it offers monetary benefits to veterans, civilians, and children exposed to Agent Orange. More than 200,000 individuals receive a monthly allowance, totaling 60 billion dong (\$4 million) a month.¹¹² According to Vietnam’s official news agency, the program costs the government approximately \$50 million a year.¹¹³

According to a representative of Office 33, the amount of the monthly stipend depends on several factors, including whether or not the person is a veteran and if the family has more than one affected person.¹¹⁴ Veterans reportedly receive 1 million dong (\$56) per month; non-veterans receive 240,000 dong (\$13.50) per month for the first victim and an additional 120,000 dong (\$6.75) per month for each additional victim.¹¹⁵ The program also covers the survivors of

¹⁰⁸ Text available online in English at <http://vava.org.vn/modules.php?name=News&op=viewst&sid=1297>.

¹⁰⁹ “Health Check-up for Agent Orange Victims,” Press Release - Embassy of Vietnam, January 8, 2001.

¹¹⁰ Ibid.

¹¹¹ Michael Palmer, “The Case of Agent Orange; Term Given to a Herbicide and Defoliant Used during the Vietnam War by the U.S. Military,” *Contemporary Southeast Asia*, April 1, 2007.

¹¹² “Human and Environmental Consequences of Agent Orange/Dioxin in Viet Nam,” Ministry of Natural Resources and Environment.

¹¹³ “Ten Percent of Agent Orange Victims receive Aid,” *Vietnam News Agency*, May 16, 2008.

¹¹⁴ Conversation with representative of Office 33, Hanoi, December 10, 2008.

¹¹⁵ Ibid.

Vietnamese war veterans who died as a direct result of AO-associated diseases. Individuals who served with the Army of the Republic of Vietnam (ARVN) are not considered veterans.

There are no AO Central Payment Programme formal provisions made for non-monetary benefits except for humanitarian center assistance and medical treatment for orphans. Furthermore, persons able to work or study and those already receiving state benefits (such as the Health Insurance Card) are excluded from the program.

Health Insurance Card

The Vietnamese government has created a Health Insurance Card, which provides free or low-cost access to health care. People on government assistance, such as victims of Agent Orange/dioxin, are provided a health insurance card and free medical care. There are also voluntary health insurance cards that require city residents pay an annual premium of 280,000 dong (\$17), and rural residents, 200,000 dong (\$12.50).¹¹⁶ The goal of the Ministry of Health's Health Insurance Department is to provide 70%-80% of the population with health insurance by 2010 and all students, as well as all children under the age of six, with health insurance by 2008.¹¹⁷ In the first six months of 2007, 14.5 million people were granted Health Insurance Cards. By the end of 2010, 53 million people, or about 62% of the population, had health insurance cards.¹¹⁸ In addition, coverage may infringe on the recipient's right to receive monetary compensation from the AO Central Payments Programme.¹¹⁹

Agent Orange Day

The government has also set aside August 10 as "Agent Orange Day," an official commemoration in support of the "victims" of Agent Orange/dioxin. August 10, 1961, was the date of the first usage of Agent Orange defoliant on Vietnamese forests. In 2008, the Vietnam Red Cross organized a "month of action" to support Agent Orange/dioxin victims, running from August 10 to September 9.¹²⁰

U.S. Civil Suit for Compensation

The Vietnamese government has also been supportive of a U.S. civil suit, *Vietnam Association for Victims of Agent Orange/Dioxin v. Dow Chemical Co.*, seeking compensation for the Vietnamese exposed to Agent Orange from the manufacturers of the herbicide. According to sources close to the case, the Vietnamese government was initially reluctant to support the suit because it might have undesirable implications for diplomatic relations with the United States. However, the suit had influential supporters with the Ministry of Defense (including Vietnam's war hero, General Vo Nguyen Giap) who were concerned about the possible expiration of statute of limitations.

On March 10, 2005, the U.S. District Court for the Eastern District of New York dismissed the case, concluding that the government contractor defense—which protects government contractors from state tort liability under certain circumstances when they provide defective products to the

¹¹⁶ "Vietnam State Health Insurance Costs Rise," Thai Press Reports, May 4, 2007.

¹¹⁷ "More to Receive Health Insurance Coverage," Vietnam News Agency, March 31, 2007.

¹¹⁸ "Health Insurance Fund Posts Surplus," *Vietnam News Service*, December 25, 2010.

¹¹⁹ Michael G. Palmer, "Healing the Wounds of War? A Discussion of Agent Orange Compensation Programmes in the United States and Vietnam," *International Journal of Comparative Sociology*, June 2003, vol. 44: p. 273.

¹²⁰ "Month of Action to Help Dioxin Victims Nationwide," Vietnam Net, August 10, 2008.

government—applied to the manufacturers of Agent Orange and other herbicides used during the Vietnam War. The court also ruled that the use of the herbicides was not a violation of international law because they were not intended to be used as a poison against humans.

The District Court ruling was appealed to the United States Court of Appeals for The Second Circuit in New York City. On February 22, 2008, the Second Circuit Court upheld the decision of the District Court.¹²¹ The Vietnamese government and various Vietnamese organizations reacted strongly to the U.S. Court of Appeals decision. The Vietnam Association for Victims of Agent Orange/Dioxin (VAVA) called the decision “irrational, biased, and unfair.”¹²² The Vietnam Association of War Veterans termed the decision “legally and morally erroneous.”¹²³ Foreign Ministry spokesman Le Dung said, “It is particularly regretful that the ruling came in a time that the U.S. government has started cooperating with Vietnam to resolve the consequences caused by Agent Orange/dioxin.”¹²⁴

On October 6, 2008, the plaintiffs filed a petition with the U.S. Supreme Court requesting a reconsideration of the Appeal Court’s decision. The Supreme Court decided on March 2, 2009, not to review the case, effectively ending the claimants’ appeal process. Vietnam’s response to the Supreme Court decision was again strong. Foreign Ministry spokesperson Le Dung said, “The Vietnamese people are extremely indignant at the wrong and unjust decision.”¹²⁵ VAVA responded to the decision by stating it “greatly regrets the decision.” VAVA also noted, “It is ironic that the U.S. Supreme Court decided not to review this lawsuit at a time when the U.S. Congress and government have recently demonstrated certain preliminary steps in resolving the consequences of Agent Orange/dioxin in Vietnam.”¹²⁶

The civil suit mirrors one submitted on behalf of U.S. Vietnam veterans in the same U.S. District Court in 1979. Although the District Court also dismissed the claim in the 1979 case, there was an out-of-court settlement in which the manufacturers of Agent Orange agreed to pay \$180 million to Vietnam veterans who claimed that exposure to Agent Orange caused them numerous health problems. It was also thought that the court case and the out-of-court settlement contributed to the passage of the various laws providing Vietnam veterans with medical coverage and disability compensation for conditions attributed to Agent Orange and dioxin. The Vietnamese plaintiffs may have hoped that their court case would have resulted in a similar out-of-court settlement and/or passage of federal laws granting them assistance or compensation.

Vietnamese Americans and Agent Orange

There are an estimated 1.6 million Vietnamese Americans in the United States. Approximately half of the Vietnamese Americans left Vietnam either immediately after the end of the war or as part of the “boat people” migration of the late 1970s and early 1980s. Some of those Vietnamese emigres were soldiers for the Army of the Republic of Vietnam (ARVN), and may have handled

¹²¹ 90 United States Court of Appeals for The Second Circuit, Docket N. 05-1760-cv, In re “Agent Orange” Product Liability Litigation, February 22, 2008.

¹²² Press statement of the Vietnam Association for Victims of Agent Orange/Dioxin, February 25, 2008.

¹²³ “Veterans Protest US Court’s Agent Orange Verdict,” *Thanhniên News*, March 9, 2008.

¹²⁴ “US Court’s Ruling Erroneous and Unjust: VN Foreign Ministry Spokesman,” Ministry of Foreign Affairs, February 25, 2008.

¹²⁵ Ministry of Foreign Affairs, “Vietnamese People are Extremely Indignant at the Wrong and Unjust Decision of the US Supreme Court,” press release, March 3, 2009.

¹²⁶ Vietnam Association for Victims of Agent Orange/Dioxin, “Statement of the Vietnam Association for Victims of Agent Orange/Dioxin (VAVA),” press release, March 3, 2009.

Agent Orange and other herbicides during the Vietnam War.¹²⁷ It is likely that some of them may have been exposed to Agent Orange and may have health problems related to that exposure.

Information about possible dioxin-related medical problems among the Vietnamese American population is not readily available. Because much of the Vietnamese American community is unfriendly towards the current Vietnamese government, some Vietnamese Americans may be reluctant to publicize their medical problems that may be potentially related to exposure to Agent Orange. However, this attitude may be changing with the younger generation of Vietnamese Americans.

Other Sources of Assistance

Prior to the early 1990s, there was little domestic or international non-governmental involvement in assisting those with AO-related diseases. In recent years, support specifically for people exposed to AO/dioxin has grown, mostly provided by non-governmental organizations (NGOs). Inside Vietnam, several Agent Orange-related organizations have been formed to raise funds via charity events and celebrity concerts. In addition, a number of Vietnamese programs for people with disabilities or the handicapped have provided medical assistance to people with conditions associated with exposure to Agent Orange/dioxin, as well as advocacy work for the rights of the disabled.¹²⁸ Outside of Vietnam, a variety of NGOs have offered technical assistance and financial support for the provision of medical care for Agent Orange victims.

Vietnamese Non-Governmental Assistance

Vietnam Red Cross Fund to Support Agent Orange Victims

In 1998, the Prime Minister of Vietnam announced the establishment of a fund to support Agent Orange victims under the Vietnam Red Cross (VRC).¹²⁹ The VRC's Fund to Support Agent Orange Victims has chapters in 64 cities and provinces across the country. It receives financial and material support from both domestic and foreign donors, as well as special fundraising events. The VRC claims it raised over 1.5 trillion dong (\$93.75 million) in 2010 for Agent Orange/dioxin victim programs.¹³⁰

The VRC provides treatment, rehabilitation, literacy and vocational training programs, and monetary support for AO victims. Since its creation, it has assisted more than 667,000 people, with almost 87,000 having received startup capital for new businesses reportedly employing more than 150,000 people.¹³¹ The VRC plans on raising at least 10 billion dong (\$602,000) annually and will contribute at least 1 billion dong (\$60,000) to provincial funds.¹³²

¹²⁷ Under an agreement between the United States and South Vietnam, ARVN soldiers were responsible for the transport and handling of the herbicides used in Operation Ranch Hand.

¹²⁸ Two examples of these Vietnamese organizations are the Children of Vietnam program in Da Nang City and the Disability Resource and Development Program of the Ho Chi Minh City Open University.

¹²⁹ "For Agent Orange Victims," Press Release - Ministry of Foreign Affairs, Government of Vietnam, undated. There is some uncertainty over the formal name of the fund as different versions appear in official Vietnamese documents and in the Vietnamese press. This report will use the name of the fund presented in the referenced material. The VRC's webpage is located at <http://chuthapdo.org.vn/redcross/en/home/index.jsp>.

¹³⁰ See <http://chuthapdo.org.vn/redcross/en/home/InfoDetail.jsp?area=1&cat=299&ID=2725>.

¹³¹ "Fund to Help Agent Orange Victims Expands," *Thanh Nien News*, June 5, 2008.

¹³² *Ibid.*

One major contributor to the VRC's Agent Orange programs is the Rare Antibody Antigen Supply, Inc. (RAAS)—a blood plasma company founded in the United States, but now also operating in China and Vietnam. RAAS has donated over 17 billion dong (\$1 million) to the VRC, and over 71 billion dong (\$4.4 million) in various forms of assistance.

On December 9, 2010, the VRC and VAVA signed a joint activity agreement to foster greater collaboration in advising the Vietnamese government on Agent Orange related policies and implementing aid programs for victims of Agent Orange/dioxin.¹³³

Vietnam Association for Victims of Agent Orange/Dioxin (VAVA)

According to their own literature, VAVA is “a social organization formed by Vietnamese AO/dioxin victims themselves and individuals or groups who volunteer to contribute their part in helping our victims in overcoming chemical consequences left behind by the U.S. military forces.”¹³⁴ At present, there are VAVA chapters in 53 provinces with over 60,000 members.¹³⁵

VAVA is a self-supporting non-government organization (NGO), reliant on private, mostly domestic contributions; it has received over \$4 million in contributions over the last five years.¹³⁶ Hundreds of districts and communes in Vietnam have benefitted from contributions from VAVA.¹³⁷ VAVA was originally established to organize the filing the lawsuit in the United States, which sought compensation for Vietnamese nationals exposed to Agent Orange. VAVA's work subsequently expanded to social services and assistance, including encouraging people exposed to Agent Orange in overcoming the difficulties of daily life; providing monetary and social assistance; raising public awareness; managing donations from individuals, organizations, and businesses; and organizing volunteer activities.¹³⁸

VAVA is arguably the leading Vietnamese organization for raising the profile of the Agent Orange/dioxin issue in Vietnam and the United States over the last few years. Inside Vietnam, VAVA has continued to exert pressure on various ministries and agencies to press for greater efforts to clean up Vietnam's environment and provide assistance to the purported Agent Orange victims. In the United States, representatives from VAVA have been among the most active proponents of greater U.S. assistance to Vietnam to address the Agent Orange/dioxin war legacy.

Charity Events

In the past decade, various organizations and groups have held multiple charity events to benefit those affected by Agent Orange, ranging from walks to raise awareness, benefit concerts, sports tournaments, and auctions, and have raised a considerable amount of money for aid. The amount of funds brought in has been substantial, with the most for a single event reportedly being around \$1 million-\$2 million. The charity events frequently feature well-known Vietnamese pop stars and/or international celebrities. For example, fund-raising concerts have been given by Vietnamese artists Trong Tan and Khanh Linh, as well as Peter Yarrow of the folk group Peter, Paul, and Mary, and Irish folk musician Mick Moloney.

¹³³ “Agent Orange Victims Get More Help,” *Viet Nam News*, December 11, 2010.

¹³⁴ The Vietnam Association for Victims of Agent Orange/Dioxin, “Join Hand in Appeasing AO/dioxin Connected Pains,” pamphlet, undated.

¹³⁵ The Vietnamese Association for Victims of Agent Orange/Dioxin, “Summary of Its Executive Central Committee's General Report at the 2nd Congress,” press release, December 3, 2008.

¹³⁶ *Ibid.*

¹³⁷ “Ten Percent of Agent Orange Victims Receive Aid,” Vietnam News Agency, May 16, 2008.

¹³⁸ *Ibid.*

Peace Villages

With the support of government assistance, a network of special schools, or “Peace Villages,” have been set up across the country for children suffering from disabilities, many said to be caused by AO/dioxin. Many of the villages have been set up near dioxin “hot spots.” The Hoa Binh Peace Village and Vietnam Friendship Village, two of the more well-known centers, are residential facilities with health care services for orphaned children, elderly or disabled adults, and children affected by dioxin poisoning and other mental and physical disabilities. Although they are privately run and funded, the Vietnamese government has given them land grants, including 27,000 square meters for the Vietnam Friendship Village. Thousands of victims, particularly children with disabilities, have been cared for and treated in the aforementioned villages and other centers around the country. However, such support activities “only meet a small part of [the] very large and long-term demand of Agent Orange/dioxin victims.”¹³⁹

International Sources of Assistance

According to an Aspen Institute table summarizing non-U.S. government and non-Vietnamese government sources of assistance for dioxin remediation and related health care services in Vietnam, a total of nearly \$40 million had been contributed by February 2012 (see **Table 3**). While some of the funding has come from other governments, the United Nations—via the United Nations Children Fund (UNICEF) and the United Nations Development Program (UNDP)—and various private foundations have made the most significant contributions. A brief summary of the assistance programs of some of the larger non-government sources follows.

The Ford Foundation

A philanthropic organization that funds humanitarian efforts around the world, the Ford Foundation has been involved with both the environmental and health legacy of Agent Orange/dioxin in Vietnam since 2000. In 2006, a Special Initiative on Agent Orange was established, seeking to address the healthcare services offered to disabled Vietnamese, reduce exposure to at-risk communities, aid in “hot spot” cleanup efforts, and encourage dialogue between Vietnam and the United States about the legacy of the Vietnam War. The Ford Foundation is working closely with both the Vietnamese and U.S. governments on its Special Initiative on Agent Orange, as well as UNICEF and the UNDP.

Since 2000, the Ford Foundation has funded a wide variety of programs and initiatives aimed at addressing the impact of Agent Orange and dioxin on post-war Vietnam. These include assisting in the development of scientific facilities to assess the impact of dioxin on the people of Vietnam, contributing to the cleanup efforts at the Da Nang airbase, supporting health care facilities for people with medical conditions associated with dioxin, disability rights advocacy, and organizing the U.S.-Vietnam Dialogue Group on Agent Orange. Through February 2012, the Ford Foundation had made grants of over \$17 million to Agent Orange/dioxin related projects in Vietnam. The Ford Foundation has also been instrumental in mobilizing funding from various other sources, including the Atlantic Philanthropies, and the Bill and Melinda Gates Foundation.

The Ford Foundation is the largest international contributor of assistance to Vietnam’s efforts to clean up dioxin. From 2000 to 2007, the Ford Foundation gave grants totaling more than \$4.8 million to government agencies, NGOs, and universities to promote the study of Agent

¹³⁹ Professor Nguyen Thi Ngoc Phuong, MD, testimony before the House Committee on Foreign Affairs, Subcommittee on Asia, the Pacific and the Global Environment, May 15, 2008.

Orange/dioxin related diseases, the creation of adequate healthcare services for children and the disabled, environmental cleanup projects, and scientific research.

Table 3. Non-Vietnamese Sources of Agent Orange/Dioxin Assistance
(through February 2012, in U.S dollars)

Source	Amount
<i>Multilateral Organizations</i>	
UNDP	\$5,450,000
UNICEF	\$2,090,119
<i>Governments</i>	
Canada	\$1,835,000
Czech Republic	\$1,800,000
Greece	\$125,500
Ireland	\$455,600
Netherlands	\$236,000
<i>Foundations</i>	
Atlantic Philanthropies	\$2,800,000
The California Endowment	\$100,000
Chino Cienega Foundation	\$20,000
Ford Foundation	\$17,133,140
Gates Foundation	\$2,750,000
Kaiser Family Foundation	\$60,000
Nathan Cummings Foundation	\$22,000
Rockefeller Foundation	\$306,800
Wallace Alexander Gerbode Foundation	\$50,000
Other U.S. Foundations	\$406,336
<i>Civic Groups, Businesses and Individuals</i>	
HSBC Bank	\$62,800
Hyatt Hotels	\$22,000
Other	\$2,857,100

Source: Aspen Institute, September 2012.

In September 2007, the Ford Foundation pledged \$7.5 million in support for the Dialogue Group.¹⁴⁰ Since November 2006, the Ford Foundation has supported the work of the Aspen Institute in establishing the Dialogue Group's effort to bring key individuals in both the United States and Vietnam together to develop practical responses to the health and environmental consequences of the use of herbicides during the Vietnam War.

¹⁴⁰ Thu Thuy, "US, Vietnam Discuss Agent Orange Remediation," Thanh Nien News, February 2, 2008.

The United Nation's Children's Fund (UNICEF)

In April 2008, UNICEF launched a project to provide healthcare and education to children with disabilities in Vietnam. In close cooperation with the government of Vietnam, UNICEF started a pilot program in Da Nang to train health workers, educators, parents, and other caregivers how to properly monitor the health and nutrition of children with disabilities.¹⁴¹ In addition to the pilot program, UNICEF has organized a fund-raising campaign that matches dollar for dollar a \$1 million grant from the Ford Foundation, with the goal of implementing similar programs all over Vietnam.¹⁴²

The United Nations Development Program (UNDP)

In 2007, the United Nations Development Program (UNDP) provided \$350,000 to a dioxin cleanup program in cooperation with Vietnam's Ministry of Natural Resources and Environment and Ministry of National Defense.¹⁴³ Preliminary plans called for the funds to be used to assess dioxin contamination in Bien Hoa and Phu Cat.

The Bill and Melinda Gates Foundation and the Atlantic Philanthropies

The Gates Foundation and the Atlantic Philanthropies have combined efforts with MONRE to finance a \$6.75 million high-resolution dioxin testing laboratory in Vietnam. The two U.S. foundations are providing \$5.50 million; MONRE is contributing \$1.25 million. The new laboratory will be the first facility in Vietnam capable of accurately measuring very low concentrations of dioxin or other chemicals in food and human tissue samples. The laboratory is expected to lower the cost of conducting more extensive dioxin contamination and exposure studies in Vietnam.

Implications for Bilateral Relations

Over the last 10 years or so, economic and security trade issues have gained priority over war legacy issues in U.S.-Vietnam relations. Although war legacy issues in the United States complicated and held up efforts to normalize relations between the two countries, the perceived mutual benefits of bilateral trade currently exert more influence on overall U.S.-Vietnam relations. However, there still remains the risk that the mismanagement of war legacy issues—such as the status of Vietnam's "victims" of Agent Orange—could derail or delay further progress in bilateral relations.

For the Vietnamese government, it appears that economic and strategic considerations will continue to take priority over U.S. assistance in cleaning up dioxin and providing assistance to people with illnesses thought to be related to dioxin exposure. Vietnam is actively seeking acceptance into the U.S. Generalized System of Preference (GSP) program,¹⁴⁴ which would remove tariffs on U.S. imports of selected goods from Vietnam, and is a party to the ongoing

¹⁴¹ "Improving Healthcare and Education for Children with Disabilities in Vietnam," UNICEF USA, April 16, 2008.

¹⁴² "UNICEF Launches Initiative to Provide Assistance to Children with Disabilities in Vietnam," UNICEF USA, April 9, 2008, available at <http://www.unicefusa.org/news/releases/unicef-launches-initiative-to.html>.

¹⁴³ "UNDP Helps Clean Dioxin Hotspots in Vietnam," Vietnam News Agency, August 28, 2007.

¹⁴⁴ See CRS Report RL34702, *Potential Trade Effects of Adding Vietnam to the Generalized System of Preferences Program*, by Vivian C. Jones and Michael F. Martin.

Trans-Pacific Partnership (TPP) negotiations.¹⁴⁵ Additionally, since the middle of the decade, Vietnam has been seeking to expand its security relations with the United States, perhaps due to China's growing influence in Southeast Asia.

Within Vietnam, however, there is widespread concern about the living conditions of its estimated 2.1 million-4.8 million people who were exposed to Agent Orange and the already identified 3 million people with medical conditions the Vietnamese government attributes to that exposure. Much of that concern is focused on the physical problems of Vietnam's children who have medical conditions associated with direct or indirect exposure to dioxin. Some observers think the Vietnamese people's generally positive attitude about the United States could change for the worse if the U.S. government is perceived to be insensitive or intransigent about Agent Orange and its associated problems.

For the U.S. government, the past policy was to deny legal responsibility for any health effects of Agent Orange/dioxin while providing some assistance with the assessment, containment, and cleaning up of any Agent Orange-related dioxin found in Vietnam. As a result, the United States has been unwilling to provide medical or financial assistance to programs specifically targeted at purported victims of Agent Orange.

For the present, the governments of both nations apparently welcome U.S. involvement in the identification, containment, and cleanup of dioxin "hot spots." At the current pace of funding, it could take several more years before all of the major dioxin "hot spots" have been remediated.

It is likely public attention will shift to caring for people exposed to Agent Orange once the cleanup is done, raising the risk of the emergence of bilateral tensions. The Vietnamese government would like to see greater U.S. support for upgrading social services to people with disabilities associated with exposure to Agent Orange/dioxin. The Vietnamese government and people see some inconsistencies between the U.S. government's reluctance to provide aid to Vietnamese victims of Agent Orange and its generous support programs for U.S. veterans who claim their medical problems are Agent Orange related.¹⁴⁶

Whereas U.S. Vietnam veterans are presumed to have been exposed to Agent Orange, and thereby automatically qualify for various benefits for a range of medical conditions, the U.S. government continues to claim that there is insufficient evidence to demonstrate that the medical conditions of Vietnamese who were exposed to Agent Orange are a consequence of their exposure to the herbicide and its dioxin. In the same vein, the willingness of the United States to provide aid to Vietnamese who lost limbs to land mines while refusing to provide help directly to people exposed to Agent Orange can be difficult to explain to Vietnamese officials and civilians. These apparent inconsistencies in U.S. policy could pose future problems for bilateral relations.

Conversely, there is a concern in the United States that if the U.S. government were to seemingly accept some legal or moral responsibility for the Vietnamese "victims" of Agent Orange, it could have undesirable implications for future military conflicts. In this view, for the U.S. government, it remains important that any and all assistance being provided to address the aftereffects of the use of Agent Orange in Vietnam be seen as a humanitarian act, and not an admission of culpability.

¹⁴⁵ See CRS Report R42694, *The Trans-Pacific Partnership Negotiations and Issues for Congress*, coordinated by Ian F. Fergusson.

¹⁴⁶ Based on interviews with Vietnamese officials and citizens. For more information about the U.S. assistance programs for U.S. veterans with medical problems associated with exposure to Agent Orange, see CRS Report R41405, *Veterans Affairs: Presumptive Service Connection and Disability Compensation*, coordinated by Sidath Viranga Panangala.

Issues and Options for Congress

For over three decades, the effects of Agent Orange and its accompanying dioxin, TCDD, on the people and the environment of Vietnam have remained in the background of U.S.-Vietnamese relations. Currently, through fora such as the Joint Advisory Committee (JAC) and the Dialogue Group, U.S. and Vietnamese officials, as well as prominent citizens of both countries, are meeting and discussing ways to jointly address the “war legacy” issues of Agent Orange, including scientific research, environmental remediation, public awareness, and health care. Assuming that recent patterns of economic and security issues taking precedence over war legacy issues continue, as well as the comparatively positive dynamics in the JAC and the Dialogue Group, it could be argued that there is no need for congressional involvement at this time.

Pending Legislation

At least two bills have been introduced in the 112th Congress that would directly or indirectly result in the appropriation of additional funds to finance the cleanup of Agent Orange/dioxin in Vietnam and/or provide assistance to Vietnamese victims of Agent Orange/dioxin. The Victims of Agent Orange Relief Act of 2011 (H.R. 2634) would require the Secretary of State to develop a plan to address the health care needs of Vietnamese nationals exposed to Agent Orange during the designated exposure period, or their progeny.

The Department of State, Foreign Operations, and Related Programs Appropriations Act, 2013 (S. 3241) would appropriate not less than \$20 million for “remediation of dioxin contaminated sites in Vietnam,” and not less than \$5 million for “health/disability activities in areas sprayed or otherwise contaminated with dioxin.” In S.Rept. 112-172 associated with S. 3241, the Senate Committee on Appropriations recommended the appropriation of

not less than \$20,000,000 for site analysis and environmental remediation of dioxin contamination at the Bien Hoa and Phu Cat hot spots, and not less than \$5,000,000 under the GHP [Global Health Programs] heading for disability surveys, monitoring, and related health activities in areas that were heavily sprayed with Agent Orange or are otherwise contaminated with dioxin....

The House version of the appropriations bill, H.R. 5857, contains no provisions pertaining to either environmental remediation or health and/or disability activities in areas of Vietnam sprayed or contaminated with dioxin. Both H.R. 5857 and S. 3241 were approved by their respective committees of jurisdiction in May 2012, but neither of them have been passed by their respective chambers of Congress.

General Issues

If Congress addresses the issues related to Agent Orange, there are several aspects of U.S. policy it could examine and consider. The most immediate issue may be to obtain more information on how the appropriated and obligated funds have been and will be used. Although the State Department and USAID have released information on the grants awarded out of those funds, they have not provided detailed information on how these funds are being used and to what extent the grantees have achieved their expected results. One option for Congress is to exercise oversight to ascertain the status of USAID’s progress, including requesting that the Government Accountability Office (GAO) conduct an audit of U.S. agent orange assistance in Vietnam.

In addition, Congress may choose to consider the appropriation of additional funds for exposure assessment research, dioxin remediation, and/or humanitarian assistance to Vietnamese nationals

allegedly suffering from medical conditions related to exposure to Agent Orange. Although past cooperative efforts in exposure assessment research encountered problems, more research can be done and the estimated cost of such research would exceed Vietnam's current budgetary capacity. Similarly, the projected cost of containing and removing the residual dioxin in and around Vietnam's Agent Orange "hot spots" is beyond the Vietnamese government's resources. According to USAID, the estimated cost of decontaminating the Da Nang airport site exceeds the amount already appropriated. The precedent for U.S. financial and technical assistance with dioxin remediation is already established, making the appropriation of additional funding potentially less problematic.

Appropriations for medical assistance *specifically* for purported Agent Orange "victims" in Vietnam may be more problematic. Although there exists a precedent, critics remain concerned about the possible implications for future conflicts. In addition, Cambodia and Laos may insist on similar treatment for their purported Agent Orange "victims" (given that parts of their nations were also sprayed during the Vietnam War), raising the potential overall cost and the administrative difficulties of addressing this war legacy issue. However, past and existing humanitarian aid programs in Vietnam, addressing victims of land mines and HIV/AIDS, demonstrate the provision of aid need not imply legal or moral responsibility. One potentially less contentious area for medical assistance may be technical support with the development of a national birth defects registry and other efforts to develop a more comprehensive assessment of the size and scope of Vietnam's disabled population.

Another alternative for Congress would be the development of a multi-year policy on the general issue of Agent Orange and dioxin in Vietnam. This policy could take the form of legislation that addresses all aspects of the issue—research on the level of dioxin in Vietnam, general population studies to determine the level of dioxin exposure in Vietnam, dioxin containment and remediation, and medical care for people with medical conditions related to dioxin exposure. One model multi-year plan has been proposed by the Dialogue Group. The development of such a program would likely necessitate consultation with the Obama Administration, as well as the Vietnamese government, in order to ensure its effective implementation.

One potential benefit of the development of a comprehensive policy on Agent Orange in Vietnam could be the enhancement of U.S. "soft power" in Southeast Asia.¹⁴⁷ To some analysts, U.S. global influence is being challenged by China (and other nations) by the use of non-military engagement—"soft power"—to encourage other countries to adopt policies or stances consistent with the goals and objectives of the nation employing these policies. It has been postulated that the U.S. military interventions in Afghanistan and Iraq have undermined its global image, and that to restore its image, the United States should more actively engage in "soft power" exercises, such as humanitarian assistance to Vietnam to address its "war legacy" problems. In addition, relations between China and Vietnam since 1975 have ranged from hostile to cool, but more recently China has sought to foster more friendly ties with its neighbors. Increased U.S. assistance for Vietnam's Agent Orange "victims" could strengthen U.S.-Vietnam relations, and encourage Vietnam to be a stronger partner to the United States in other diplomatic and security areas.

¹⁴⁷ For more on the issue of U.S. "soft power," see CRS Report RL34620, *Comparing Global Influence: China's and U.S. Diplomacy, Foreign Aid, Trade, and Investment in the Developing World*, coordinated by Thomas Lum.

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